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Building Stone Potential in Eastern Ontario

Ontario Geological Survey
Mineral Deposits Circular 30

by P.S. LeBaron, C.P. Verschuren, V.C. Papertzian and P.W. Kingston

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Foreword

Development of the dimension stone industry in eastern Ontario began in the early 1800s with the use of local, easily quarried limestones and sandstones in the construction of buildings and in major projects such as the Rideau canal. Granites, marbles and gneisses have also been quarried as sources of architectural and monumental stone, flagstone, terrazzo chips and ornamental stone.

The current resurgence in the use of building and decorative stone in both the commercial and residential markets offers an opportunity for expansion of the stone industry in eastern Ontario. This study provides both general guidelines for evaluating dimension stone prospects and detailed information on over 200 sites investigated by the Ministry. Results of the study indicate that there is good potential for development of the granites, marbles and limestones of eastern Ontario, particularly as relatively small operations designed to supply markets in southern Ontario.

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V.G. Milne

Director
Ontario Geological Survey

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CONVERSION FACTORS FOR MEASUREMENTS IN ONTARIO GEOLOGICAL SURVEY PUBLICATIONS

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709 7	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
		AREA			
1 cm²	0.155 0	square inches	1 square inch	**6.451 6**	cm²
1 m²	10.763 9	square feet	1 square foot	**0.092 903 04**	m²
1 km²	0.386 10	square miles	1 square mile	2.589 988	km²
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm³	0.061 02	cubic inches	1 cubic inch	**16.387 064**	cm³
1 m³	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m³
1 m³	1.308 0	cubic yards	1 cubic yard	0.764 555	m³
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
		MASS			
1 g	0.035 273 96	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 75	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 62	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 908 8**	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

Building Stone Potential in Eastern Ontario

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Abstract

The building stone industry in North America has experienced substantial growth in recent years, and interest in developing local sources of stone has increased correspondingly. Eastern Ontario has historically produced various stone commodities such as terrazzo chips, flagstone, structural stone, monument stone, ornamental stone and architectural stone from Precambrian rocks (plutonic rocks, gneisses and marble) of the Grenville Province and from Paleozoic rocks (sandstone, limestone and dolostone) of the St. Lawrence Platform.

This study, focussing primarily on the plutonic rocks of the Central Metasedimentary Belt of the Grenville Province, but also including numerous marble, and some limestone prospects, has identified several areas with good building stone potential. The prospects, over 200 of which were examined in the field, were evaluated with respect to joint pattern and intensity, colour, texture and deleterious mineral content. Because of the complex metamorphic and structural history of the Grenville Province, areas with limited jointing and consistent colour and texture required by the building stone industry are rare. The most promising area is the high-grade metamorphic terrain of the Frontenac Axis, which hosts eastern Ontario's largest granite dimension stone quarry (Battersea, Storrington Township). However, local areas west of the Frontenac Axis also have good potential for granite and marble building stone development, particularly as relatively small operations to supply markets in southern Ontario.

Résumé

L'industrie de la pierre de construction en Amérique du Nord a connu une expansion importante au cours des dernières années et un intérêt pour l'exploitation des sources locales de pierre s'est développé en conséquence.

L'est de l'Ontario a toujours fourni différents produits en pierre tels que de la pierre concassée, des dalles, de la pierre de taille, de la pierre d'ornement, de la pierre de monument et de la pierre de revêtement architectural. Ces produits sont extraits des roches préambriennes (roches plutoniques, gneiss et marbre) de la province de Grenville et des roches du Paléozoïque (grès, calcaire et dolomie) de la plateforme du St. Laurent.

Cette étude, axée principalement sur les roches plutoniques de la Ceinture Métasédimentaire Centrale de la province de Grenville, a repertorié plusieurs sites avec un bon potentiel pour la pierre de construction, mais porte également sur de nombreuses possibilités pour le marbre et quelques possibilités pour le calcaire. Les sites d'exploration, dont plus de 200 ont fait l'objet d'une étude sur le terrain, ont été évalués quant à la répartition et l'intensité des diaclases, la couleur, la texture et la présence de minéraux délétères. En raison de l'histoire métamorphique et structurale complexe de la province de Grenville, rares sont les sites explorés où les roches sont peu fracturées et dont la couleur et la texture sont uniformes, selon les critères requis par l'industrie de la construction. Le secteur le plus prometteur est le terrain de haut degré métamorphique de l'axe de Frontenac, où est située la plus grande carrière de granite fournissant de gros blocs de taille dans l'est de l'Ontario (Battersea, canton de Storrington). Cependant des secteurs à l'ouest de l'axe de Frontenac ont aussi un bon potentiel pour l'exploitation du granite et du marbre pour la construction, surtout en ce qui concerne de petites exploitations pour alimenter les marchés dans le sud de l'Ontario.

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Part 1. Introduction

This report presents the final results of a multiyear study on the granite and marble building stone potential of eastern Ontario. Some of the information has been previously published in Ontario Geological Survey (OGS) Open File Reports 5556 (Verschuren et al. 1985) and 5585 (Verschuren et al. 1986).

Open File Report 5556 presented a general introduction to the building stone industry (deposit criteria, terminology) and the results of a literature search for building stone occurrences and aggregate quarries in eastern Ontario. This work was followed by field investigations of building stone occurrences which appeared, based on the literature, to have potential for development. In addition, a reconnaissance survey was initiated to examine new areas considered to have building stone potential, based on a study of geological reports. Open File Report 5585 documented the results of the 1985 field work and literature search. In 1986, the reconnaissance survey was completed and samples were obtained for cutting and polishing from prospects considered to have the highest potential for development. All results of the 1986 field work and a summary of the results of previous work are included in this report.

STUDY OBJECTIVES

The building stone industry in North America is experiencing a period of substantial growth, with a return to traditional building styles which make use of natural stone as both structural and decorative material. North American producers are currently expanding and upgrading stone processing facilities in an attempt to become more competitive with foreign suppliers of building stone (Meade 1986). This investment has resulted in reduced finishing costs which, in turn, has generated interest in opening new deposits.

The stone industry in eastern Ontario has produced various commodities including roofing granules, terrazzo chips, slate products, flagstone, construction blocks, ornamental stone and dimension stone. Source rocks for these products are plutonic rocks, marble, slate, sandstone and limestone. The availability of resources and a substantial market in eastern Ontario should encourage the initiation of exploration programs by the private sector.

The purpose of this study is to provide information based on literature searches and field work which will be useful in developing exploration programs for building stone in eastern Ontario. Because of the limited potential for commercial slate in the study area, emphasis has been placed on identifying areas of granite and marble with potential for development.

ORGANIZATION OF THE REPORT

This report is divided into three parts:

Part 1. Introduction—contains background information on the building stone project and on the geology of the study area.

Part 2. The Building Stone Industry—provides a general introduction to various aspects of the industry, describing commodity definitions and uses; market trends and outlook; building stone deposit criteria; quarry economics; and ASTM tests.

Part 3. Building Stone Potential in Eastern Ontario—describes the current state of the industry in eastern Ontario; the results of 1985 and 1986 field work; and provides evaluations of the areas examined and recommendations for exploration.

Detailed reports on each site examined in 1986 are included as an appendix, as is a table summarizing the features of sites examined in 1985. Detailed reports on the 1985 sites are available in OGS Open File Report 5585 (Verschuren et al. 1986).

LOCATION OF THE STUDY AREA

Figure 1 shows the townships in which properties were examined in 1985 and 1986. The western limit of the study area extends roughly from Lake Simcoe to Lake Nipissing, including parts of the eastern shore of Georgian Bay. The eastern boundary extends from the Brockville area to the Pembroke area. The results of the 1985 examinations in the Lake Simcoe to Lake Nipissing area are summarized in this report. A more detailed study of building stone potential in that area, the Ontario Gneiss Segment of the Central Gneiss Belt (Figure 2), is currently being conducted by the Ontario Ministry of Northern Development and Mines, Dorset (Marmont and Johnston 1987).

This report deals primarily with Precambrian rocks of the Central Metasedimentary Belt and, to a lesser extent, the Paleozoic rocks of the St. Lawrence Platform (Figure 2) in the counties of Peterborough, Hastings, Lennox and Addington, Frontenac, Leeds and Lanark.

GENERAL GEOLOGICAL SETTING

The study area is underlain by Precambrian rocks of the Grenville Province, except in the extreme southern and eastern parts where the Grenville is overlain by undeformed Lower Paleozoic sedimentary rocks of the St. Lawrence Platform (Figure 2). The following descriptions are summarized from Wynne-Edwards (1972).

The Grenville Province in central and eastern Ontario has been subdivided into the Ontario Gneiss Segment of the Central Gneiss Belt and the Central Metasedimentary Belt. Some areas of the Ontario Gneiss Segment were examined in 1985, but the primary focus of this report is the Central Metasedimentary Belt.

The Ontario Gneiss Segment is dominated by quartzofeldspathic gneisses with local areas of marble,

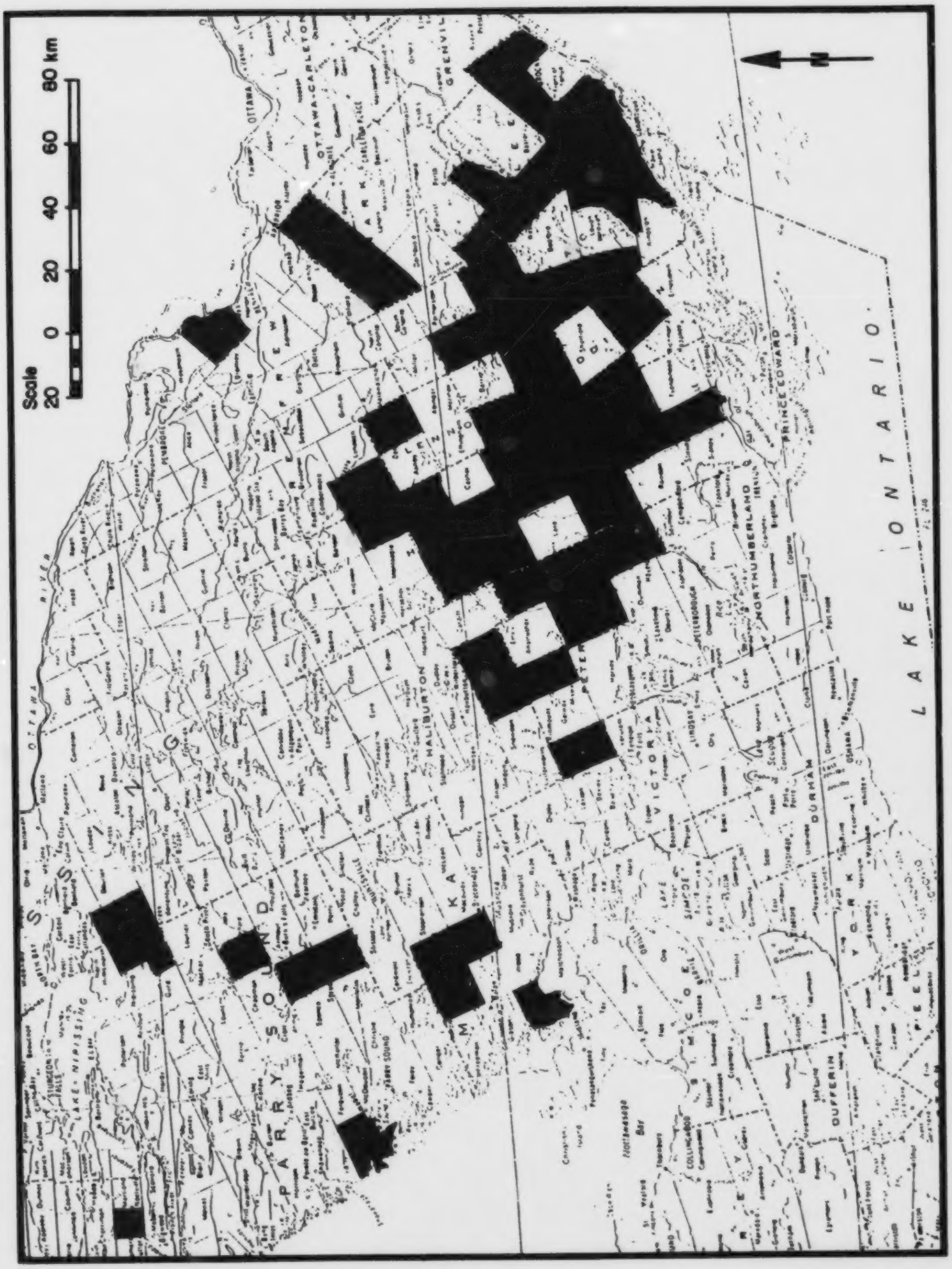

Scale
20
0
20
40
60
80 km
N
LAKE ONTARIO
OTTAWA RIVER
LAKE NIPISSING
NIPISSING
PARRY SOUND
MUSKOKA
HALIBURTON
VICTORIA
PETERBOROUGH
NORTHUMBERLAND
DURHAM
YORK
PEEL
SIMCOE
LAKE SIMCOE
DUFFERIN
GREY
RENFREW
LENNOX
LANARK
GRENVILLE
OTTAWA-CARLETON
PRINCE EDWARD
Nottawasaga Bay

Figure 1. Location of the study area showing townships in which building stone prospects were examined.

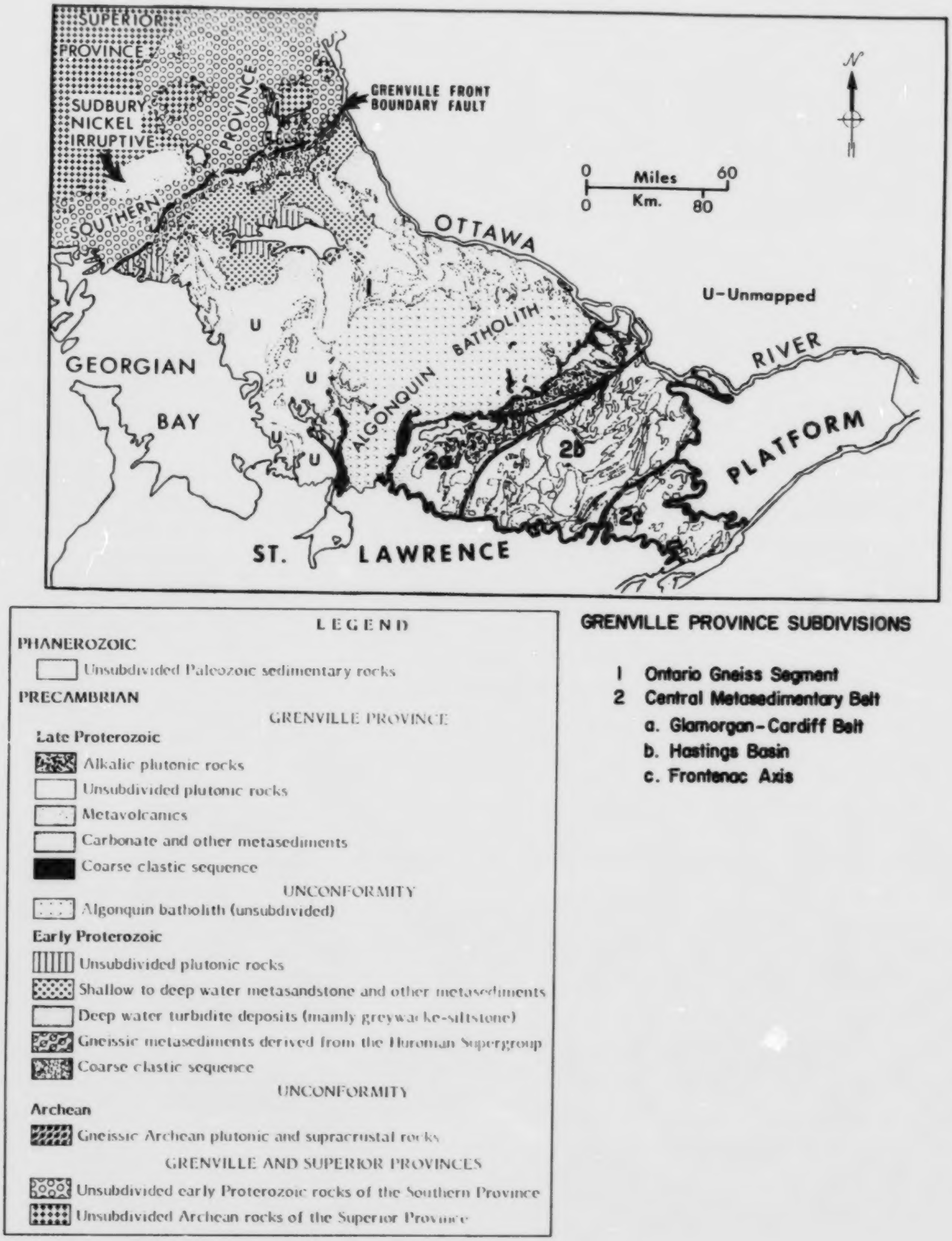

SUPERIOR PROVINCE
SUDBURY NICKEL IRRUPTIVE
SOUTHERN PROVINCE
GRENVILLE FRONT BOUNDARY FAULT
N
0 Miles 60
0 Km. 80
OTTAWA RIVER
U-Unmapped
U
1
ALGONQUIN BATHOLITH
GEORGIAN BAY
2a
2b
2c
PLATFORM
ST. LAWRENCE
LEGEND
PHANEROZOIC
Unsubdivided Paleozoic sedimentary rocks
PRECAMBRIAN
GRENVILLE PROVINCE
Late Proterozoic
Alkalic plutonic rocks
Unsubdivided plutonic rocks
Metavolcanics
Carbonate and other metasediments
Coarse clastic sequence
UNCONFORMITY
Algonquin batholith (unsubdivided)
Early Proterozoic
Unsubdivided plutonic rocks
Shallow to deep water metasandstone and other metasediments
Deep water turbidite deposits (mainly greywacke-siltstone)
Gneissic metasediments derived from the Huronian Supergroup
Coarse clastic sequence
UNCONFORMITY
Archean
Gneissic Archean plutonic and supracrustal rocks
GRENVILLE AND SUPERIOR PROVINCES
Unsubdivided early Proterozoic rocks of the Southern Province
Unsubdivided Archean rocks of the Superior Province
GRENVILLE PROVINCE SUBDIVISIONS
1 Ontario Gneiss Segment
2 Central Metasedimentary Belt
a. Glamorgan-Cardiff Belt
b. Hastings Basin
c. Frontenac Axis

Figure 2. Generalized geology (from Sims et al. 1981) and subdivisions of the Grenville Province (after Wynne-Edwards 1972).

quartzite, and paragneiss of the Grenville Supergroup. The grade of metamorphism is generally upper amphibolite facies. The gneisses are intruded by a variety of mafic to felsic plutonic rocks. These igneous complexes are generally highly deformed by regional metamorphism, but are locally massive to weakly foliated.

The Central Metasedimentary Belt hosts the rocks of the Grenville Supergroup, a suite of metamorphic carbonates, calc-silicates, quartzites, paragneisses, amphibolites, and metavolcanic rocks. These have been intruded by mafic to felsic plutonic rocks, some of which appear as large areas of granitic and tonalitic gneiss. Metamorphic grade is amphibolite facies at the northwestern margin of the belt, decreasing to greenschist facies at the centre of the belt (the Hastings Basin), and increasing to amphibolite and granulite facies in the southeast (the Frontenac Axis).

Paleozoic rocks of the St. Lawrence Platform that lie within the study area include Potsdam or Nepean Formation sandstone, Shadow Lake Formation shale, Oxford Formation dolomite east of the Frontenac Axis, and limestone of the Gull River and Bobcaygeon formations west of the Frontenac Axis (Hewitt 1972).

PREVIOUS WORK

Descriptions of occurrences and past producers of building stone are given in reports by Parks (1912), Goudge (1938), Carr (1955) and Hewitt (1964a–f).

Geological maps and reports covering most of the study area have been published by the Ontario Geological Survey and the Geological Survey of Canada. References are listed in the property description reports.

Market studies for building stone have been done for northwestern Ontario (Les Consultants Sogir Inc. 1984) and New Brunswick, Nova Scotia and Newfoundland (DPA Group Inc. 1987).

In reviewing these reports, it should be noted that requirements of the building stone industry have changed, therefore, some conclusions which were valid in 1912 or 1955 may require re-evaluation. For example, irregularities such as inclusions or veining which previously have been considered defects may be desirable features in some current building designs, and blocks which were previously considered large at 5 to 10 tons are only about one-half the size now required by the dimension stone industry.

METHODOLOGY

The project began with an inventory of building stone occurrences in eastern Ontario, obtained by reviewing the available literature and literature published in Verschuren et al. (1986). Properties were then selected for further investigation based primarily on apparent potential with respect to large quarry block size. A reconnaissance survey was also initiated in an attempt to delineate new areas with high building stone potential. Selection of areas was based on a study of geological reports with emphasis placed on identifying massive to weakly foliated, late-tectonic intrusive rocks.

The reconnaissance survey and quarry examinations were done in the summer and fall of 1985 and 1986. Geological information was recorded on data forms, and photographs of most sites were taken. Petrographic descriptions of the 1985 samples were obtained from thin sections; mineralogy of the 1986 samples was determined from hand specimens.

Upon completion of the property examinations, samples were taken from 51 sites considered to have good potential for building stone development. Samples in the order of 0.3 m^3 were obtained by plug and feather quarrying and shipped to Oxford Monuments Limited, Woodstock, Ontario where they were cut into 30 by 30 by 4 cm slabs and polished. The polished samples, listed in Appendix E, can be viewed at the Ministry of Northern Development and Mines (MNDM) Drill Core Library, Tweed. Several samples were subjected to ASTM tests, the results of which are included in Appendix D and summarized in Part 3 of this report.

Acknowledgments

The authors would like to thank W.D. Hicks, formerly with the Geoscience Laboratories of the Ontario Geological Survey, and Alistair MacKinnon of the Ministry of Northern Development and Mines, Tweed, for providing petrographic descriptions from thin section studies. Site examination and sample quarrying were done with the assistance of Vince Bernard, Derek Benn, Gordon Vogt, Graham David, John French, and Sandra Wort. ASTM tests were performed by R.L. Chevrier under the supervision of R.K. Collings at the Mineral Sciences Laboratories, CANMET, Energy Mines and Resources Canada (EMR). Oliver Vagt, also of EMR (Industrial Minerals Division), provided recent statistics on building stone production and consumption.

The co-operation of many local residents in providing access to their properties is appreciated. In particular, the authors would like to thank Bill Houston and Bob Nash of Stoklosar Marble Quarries Ltd., Richard Cloutier of Rideau Red Quarries, Jim Byer of Actinolite, and Roger Young of Havelock.

Rainer Wolf of the Ministry of Northern Development and Mines kindly provided editorial comments.

Part 2. The Building Stone Industry

COMMODITY DEFINITIONS AND USES

The following terms are commonly used in the stone industry. Rock names often bear little relation to the accepted geological terms.

Ashlar roughly rectangular pieces of stone of nonuniform size (5 to 10 cm thick, up to 0.5 m^2 in surface area); used for walls, fences and fireplaces.

Architectural Stone thin slabs (1.5 to 3 cm thick) of stone for facing buildings and monuments, also referred to as cladding; also includes interior-exterior flooring. Interior flooring (tiling) is generally 7 to 12 mm thick.

Dimension Stone a natural stone that has been quarried and shaped to certain dimensions for use in the building or monument industries.

Curbing Stone rectangular blocks, usually granite (about 0.15 by 0.45 by 2 m) used as curbing in road and bridge construction.

Flagstone stone which can be split into thin slabs (7 to 10 cm thick); used for sidewalks and patios.

Granite any crystalline igneous rock. Light coloured rocks are generally termed granite and dark rocks (usually gabbro, diabase) are referred to as "black granite". These terms can include volcanic, siliceous sedimentary, and metamorphic rocks as well as all plutonic rocks.

Landscaping Stone decorative rock including crushed, coloured stone, boulders and rough blocks used for sidewalks, driveways, borders and rock gardens.

Marble and Limestone marble is any carbonate rock that can be highly polished while limestone is a carbonate rock that cannot be polished well. The term marble also includes dark green serpentinites, despite their metaigneous nature.

Monumental Stone all natural stone used for the manufacture of statues, tombstones, mausoleums and other monuments. The primary requirements are uniform texture and colour with a lack of flaws.

Ornamental Stone any attractive rock suitable for the manufacture of small objects such as ashtrays and bookends. Rocks with flaws such as veins or inclusions, which are not suitable for architectural or monumental stone, may be marketable as ornamental stone.

Paving Stone rectangular, brick-sized blocks of roughly equal dimensions for sidewalks, driveways and road construction.

Rubble randomly sized and shaped stone used for retaining walls, sea walls, fences, and so on. These uses provide an economical way of disposing of quarry waste rock.

Structural Stone roughly rectangular blocks from less than a few tons to over 25 tons in weight. The primary requirement is high strength; colour and texture are secondary considerations.

Terrazzo Chips crushed stone, usually coloured marble or limestone, which is embedded in mortar and polished to form terrazzo floors.

THE BUILDING STONE MARKET

The potential for developing a dimension stone industry, in addition to requiring adequate reserves of suitable stone, is dependent upon the market—its size, location, and expectations in terms of commodity type, quality and quantity. A prospective producer must study both the current and potential market conditions, considering that the market is, to a large extent, made by the producers. Demand for a product is dependent, in part, on its availability; a market can be created or expanded by the promotion of new stones and new commodities. For example, the province of Quebec uses 300 000 linear feet of granite curbing per year, the New England States more than one million feet per year, yet Ontario uses none (Les Consultants Sogir Inc. 1984). The reasons for this difference appear to be that the product is not available in Ontario and that Ontario civil engineers have not adequately studied the economic value of granite curbing. Ontario granite producers could create a local market by promoting and making granite available as an alternative curbing material, using the example of Quebec and New England to demonstrate the lower life cycle cost (initial, maintenance and replacement costs over a determined life cycle) of granite.

An analysis of market potential for various building stone commodities in eastern Ontario is beyond the scope of this study. However, a brief overview of recent market trends for the building stone industry in general is presented below.

HISTORIC TRENDS

The building stone market in Canada was relatively stable through the late 1970s. In 1980–81, both volume and value of Canadian shipments of building stone began to increase (Table 1) but this growth was halted by the 1981–82 economic recession as commercial and residential construction activity decreased sharply. The market continued to slump through 1983 but began to recover in 1984 as a result of both increased construction activity and the trend toward greater use of natural stone in architectural designs. Market growth has continued through 1987 as illustrated by the rough stone import and export figures for Canada in Table 2.

The market trend for building stone in general as described above reflects the trend for rough stone, which represents about 75 to 80 percent of the building stone shipments. Demand for monumental stone, in contrast to that for rough stone, has increased each year since 1980 with the exception of 1983 in which very little change occurred. Other uses of stone show a steady de-

TABLE 1. CANADA, TOTAL SHIPMENTS OF BUILDING STONE, 1979–85.

	1979		1980		1981		1982		1983		1984		1985	
Building Stone	**(000t)**	**($000)**	**(000t)**	**($000)**	**(000t)**	**($000)**	**(000t)**	**($000)**	**(000t)**	**($000)**	**(000t)**	**($000)**	**(000t)**	**($000)**
Rough	256	3094	268	3873	376	6047	230	4828	205	7359	248	9284	280	10 581
(% change from previous year)			+5	+25	+40	+56	-39	-20	-11	+52	+21	+26	+13	+14
Monumental and Ornamental Stone	30	2410	18	1899	27	3207	38	4002	39	4012	53	5990	58	6527
(% change from previous year)			-40	-21	+50	+69	+41	+25	+3	+0.2	+36	+49	+9	+9
Other (flagstone, curbstone, paving blocks, etc.)	35	1703	40	1585	33	1134	26	1027	19	900	17	937	25	1387
(% change from previous year)			+14	-7	-17	-28	-21	-9	-30	-12	-10	+4	+47	+48
Total	321	7207	326	7357	436	10 388	294	9857	263	12 271	318	16 211	363	18 495
(% change from previous year)			+2	+2	+34	+41	-33	-5	-11	+24	+21	+32	+14	+14

Source: Canadian Minerals Yearbooks 1981 to 1987; Energy, Mines, and Resources Canada.

TABLE 2. CANADA, ROUGH BUILDING STONE EXPORTS AND IMPORTS, 1985–87.

	1985		1986		1987 (Jan.–Sept.)	
	(tonnes)	($000)	(tonnes)	($000)	(tonnes)	($000)
Exports						
Building Stone, Rough	12 511	1657	66 427	2477	119 728	3933
(% increase from previous year)			+431	+49	+80	+59
Imports						
Building Stone, Rough	8846	1379	10 622	1853	12 837	1644
(% increase from previous year)			+20	+34	+21	-11

Source: Canadian Minerals Yearbook 1987; Energy, Mines and Resources Canada.

crease in demand until 1985 when a sharp reversal of the downward trend took place.

The United States market followed a similar trend. Both tonnage and value of dimension stone sold or used by producers declined sharply from 1981 to 1982 and recovered in 1984. Demand for finished marble was 72 percent higher in 1984 than in 1983; travertine imports were 133 percent higher, and granite imports 93 percent above the previous year's total (DPA Group Inc. 1987).

MARKET OUTLOOK

The DPA Group Inc. (1987) reported that "discussions with many architects and developers based in central Canada indicate that there is a definite resurgence in the use of natural stone," with the primary markets being Toronto, Ottawa and Montreal. The same report states that officials in the Building Stone Institute of America expect the next four years (1987–90) to be exceptional for stone use and that the Marble Institute of America reports "phenomenal growth" in the industry.

A 1986 survey of 1000 USA architectural firms conducted by the Building Research Bureau also suggests a positive market outlook. Replies to the question of whether the use of natural stone in the firms' buildings will increase, decrease or remain the same over the next five years are as follows (calculated from data in *Dimensional Stone Magazine,* July/August 1986):

	Remain the same	Increase moderately/greatly		Decrease moderately/greatly	
Granite	58.0%	32.5%	6.1%	2.7%	0.7%
Marble	58.0%	28.9%	7.5%	3.8%	1.8%
Limestone	72.8%	22.5%	2.0%	2.1%	0.6%

The increase in demand for stone from the commercial construction market applies to the residential market as well. New developments in stone processing technology have made possible the production of very thin, lightweight stone tiles (7 mm marble for interiors; 1 cm granite and 2 cm marble for exteriors). These thin tiles require lighter, less expensive back-up walls, greatly reducing total construction and installation costs (Powell 1986). New designs for residential buildings are incorporating stone tiles for their unique appearance in contrast to manufactured products, as well as for durability and easy maintenance (DPA Group Inc. 1987).

In summary, the growth of the building stone industry is expected to continue based on 1) the architectural trend toward greater use of stone for both aesthetic and structural reasons; 2) advances in stone cutting and processing technology which have made building stone a more competitively priced alternative to steel, concrete, glass and ceramics; and 3) improvements in construction techniques which have lowered installation costs.

BUILDING STONE DEPOSIT CRITERIA

The commodities of the building stone industry are produced from numerous rock types, each with a wide variety of qualities such as colour, texture and hardness. These properties, along with the extractable quarry block size, determine the potential uses of a body of rock with respect to building stone.

The criteria for deposits of various building stone commodities are discussed below.

ARCHITECTURAL AND MONUMENTAL STONE

Granite

The criteria for granite architectural and monumental stone deposits, in approximate order of importance, are: a limited, regular jointing pattern; marketable colour and texture; low deleterious mineral content; and large deposit size. These are described in more detail below.

Fracture and jointing determine the maximum size of blocks that can be quarried. Evaluation of the building stone potential of a granite body must include measurements of the attitude and spacing of major joint sets. The most desirable joint pattern consists of two subvertical, roughly orthogonal sets and a horizontal set, referred to as sheeting. A third subvertical set striking at an angle to the orthogonal set will make quarrying difficult, as will joint sets dipping at less than 75 degrees or intersecting at less than 60 degrees. The minimum spacing required is about 2 m for vertical and 1 m for horizontal joints, as quarry blocks are generally at least 1 by 2 by 1.5 m in size. Sheeting is the result of stress release due to erosional unloading. These joints usually become more widely spaced with depth, but zones of closely spaced sheets (4 to 20 cm) can occur at depth; sheeting in anorthosites often increases with depth (Nantel 1983). Granite bodies with no vertical joints frequently have close-spaced sheeting and vice versa, a feature related to the dissipation of sheeting stress by movement on pre-existing primary joints (Hills 1972). Many of the granite quarries in Vermont, which produce architectural and monumental stone would not have been developed if not for the exploitation of well-sheeted cap rocks as rough building blocks in the early history of the area. Therefore, even a well-sheeted granite, if the vertical joint sets are satisfactory, may warrant investigation at depth.

A more complete discussion of primary and secondary jointing was presented in Verschuren et al. (1985).

Colour and texture control the price and marketability of a stone, rather than its physical properties such as strength and porosity (Allison 1984). In general, colour and texture of a granite must be consistent in order to fill large orders for stone. The distinction between uniform and consistent texture is important. Monumental granite generally requires an even, fine grain size while architectural granite can be less uniform in texture, exhibiting variable grain size or gneissic banding. The stone, therefore, must be either very uniform in texture or nonuniform in an interesting and consistent manner (Storey 1986).

Textures that are generally considered as flaws, but may in some cases be desirable are: knots—dark masses of mafic minerals; lines—any linear pattern formed by foliation, layering, flowbanding; variable grain size; pegmatite patches; quartz veins; and schlieren.

Colour is determined by mineralogy and grain size. Fine-grained rock is generally darker than a similar coarse-grained rock. Polishing also makes a rock appear darker. Mafic rocks which are dark green on a rough surface often appear black when polished. A good contrast between rough and polished surface colour is desirable in any granite that will receive cut or sandblasted lettering.

White, red, and black granites are the colours currently most in demand. Deep red shades result from high concentrations of hematite. Black granites (commonly gabbro, anorthosite, or diabase) command the highest price because a darker stone shows irregularities in colour and texture more readily than a lighter stone. The proportion of waste rock is therefore higher in a black granite quarry than in a light granite quarry. Waste in the Peribonca River anorthosites of Quebec can be as high as 90 percent (Nantel 1983).

Other colours of granite may be marketable if quarried inexpensively and offered at a competitive price. Domestic replacements for high-priced imports should be pursued, but not to the extent that other granites are excluded as exploration targets.

Deleterious minerals include any mineral that breaks down rapidly due to weathering. Sulphides should be absent or present only in trace amounts. Soft ferromagnesian minerals and altered feldspars weather easily and will not sustain a polish. Excessive biotite (greater than 5 percent) can cause plucking during polishing, and garnet and corundum can cause polishing problems because of their hardness. Magnetite and ilmenite are common in granites, but are resistant to weathering and are generally acceptable.

Deposit size should be sufficient to quarry for at least 20 years. A minimum size is about 1 km^2 (Storey 1986), but may be smaller for good quality stone being produced for local markets.

Marble and Limestone

The same general criteria used to evaluate granite deposits apply to marble and limestone. Several problems related specifically to eastern Ontario marbles are discussed below.

Joint patterns must allow extraction of large blocks (at least 3 m^3), as for granite quarrying.

A very wide range of colours and textures are marketed, most being produced in Italy and several other European countries. European marbles were formed by very low grade metamorphism of thickly bedded (1 to 2 m), extremely pure limestones. Eastern Ontario marbles were formed by low- to high-grade metamorphism (greenschist to granulite facies) of thinly bedded (0.2 to 5 cm) impure limestone and dolostone (Verschuren et al. 1985). For this reason, eastern Ontario marbles cannot be expected to duplicate the qualities of European marbles, but must be promoted and marketed for their own unique colours and textural patterns.

Within areas of low-grade metamorphism, thin bedding and intense folding result in planes of weakness and inconsistent colour and/or texture patterns. Recrystallization at higher grades of metamorphism increases strength along bedding planes and can obliterate primary banding, but weakens bonds between individual grains. This can cause plucking of grains during polishing.

Higher grade metamorphism of impure, siliceous limestone or dolomite produces medium- to coarse-grained marbles containing calc-silicate and magnesium-silicate minerals such as talc, tremolite, forsterite, diopside, periclase, wollastonite and serpentine. This can result in attractive colour and/or texture patterns, but the stone may require granite rather than marble processing equipment because of the silicate mineral content. Similar rocks often result from metasomatic alteration of marbles along fault zones or at intrusive rock contacts.

Dolomitic marble under low grade metamorphic conditions deforms in a brittle manner, while calcitic marbles undergo plastic deformation. This usually precludes the extraction of large quarry blocks from low-grade dolomitic marble, but healing of fractures by late carbonate or silicate material can produce an attractive stone with good quarry block size potential. Iron-bearing carbonates within the marble or veins may weather to a rusty brown colour, making the stone unsuitable for architectural or monumental purposes.

Limestone is not generally used as architectural or monumental stone because, in the building stone definition, limestone does not polish well. However, some true limestones are marketed as marbles. They are usually fine grained, dark coloured, and thickly bedded.

In general, eastern Ontario marbles are characterized by larger grain size and more variable texture than European marbles. However, a sufficiently large deposit of consistent texture could, if well promoted, provide a domestic alternative to more costly, imported marble.

CURBING AND STRUCTURAL STONE

Curbstone can be produced from granite, sandstone, or limestone, but granite is the dominant type. The granite body must be jointed in a way that allows the rock to be split into long, rectangular sections.

Colour and texture are of less importance. A report published by the Ontario Ministry of Transportation and Communications (Rogers 1985) encouraged the use of granite curbing in highway construction in Ontario. Locally produced granite curbstone can be installed at a total cost comparable with that of less durable poured-in concrete curbing (Les Consultants Sogir Inc. 1984).

Structural stone primarily requires high strength and a joint pattern suitable for extraction of blocks from a few tons to 25 tons in weight. Colour and texture are secondary considerations. Granite is the most commonly used structural stone, but limestone is also an excellent material for structural applications.

STONE FOR OTHER USES

Other uses of stone include ashlar, paving stone, flagstone, landscaping stone, rubble, crushed stone, terrazzo chips, and ornamental stone. The required characteristics of stone for these uses, as implied by the commodity definitions, vary greatly, from ease of splitting (paving and flagstone) to variable colour (terrazzo chips and ornamental stone). Virtually any rock is suitable for at least one of these uses, but the combination of low price and/or low demand generally precludes the opening of a quarry solely for the production of one of these commodities, many of which can be produced from the waste rock of a dimension stone quarry.

QUARRY ECONOMICS

Most quarries are not suited to the exclusive production of large blocks, due to local irregularities in joint pattern or intensity, colour, or texture. The current increasing demand for large panels of architectural stone, requiring large quarry blocks, has led to high-grading, or selective quarrying which involves a higher quarry cost than total extraction. However, total extraction requires a market for rough stone, rubble, ashlar, and so on to be economically viable. This is an important factor in assessing the potential of a stone deposit. A low degree of variation in jointing, colour, and texture is more critical in a market where only a small range of products is sold than in a market where a complete range of products, from architectural stone to rubble, is in demand (Meade 1986).

Any property with potential for the production of architectural and monumental stone should also be considered as a potential source of structural stone, curbstone, ashlar and crushed stone. The entire range of products should be strongly promoted in order to achieve a quarry operation based on total extraction with a low proportion of waste rock, rather than on the less cost-efficient process of selective extraction.

ASTM TESTS

Building stone products must meet specific physical property requirements. These specifications and tests have been developed by the American Society for Testing and Materials (ASTM). Procedures for the tests listed in Table 3 are available from the Society (1916 Race Street, Philadelphia, PA 19103, USA).

TABLE 3. ASTM SPECIFICATIONS FOR BUILDING STONE.

C97–83	Absorption and bulk specific gravity
C99–52	Modulus of rupture
C119–83C	Standard definitions of terms
C120–52	Flexure testing of slate
C121–48	Water absorption of slate
C131–55	Abrasion resistance by Los Angeles Test
C170–50	Compressive strength
C217–58	Weather resistance of natural slate
C218–48T	Combined effort of temperature cycles and wash salt solutions on natural building stones
C241–51	Abrasion resistance of stone subjected to foot traffic
C406–84	Roofing slate
C503–79	Exterior marble
C543–81	Slate blackboards
C568–79	Dimension limestone
C615–80	Granite Building Stone

Part 3. Building Stone Potential in Eastern Ontario

CURRENT PRODUCERS

There are currently 12 companies producing building stone products in eastern Ontario. The commodities produced include monumental and architectural stone, flagstone, ashlar, terrazzo chips, and decorative aggregate. Table 4 lists the companies and products; Figure 3 shows quarry and plant locations.

Other major producers in Ontario include Arriscraft Corp. of Cambridge with dolomitic limestone (marketed as marble) quarries in the Bruce Peninsula and Nelson Granite with granite quarries in Vermilion Bay near Kenora.

There are numerous past producing quarries and test quarries of granite, marble and limestone throughout eastern Ontario, many of which are described in the 1985 and 1986 property examination reports.

RESULTS OF 1985–86 RECONNAISSANCE SURVEY

Data from field work were recorded on data forms and are presented in property examination reports with location maps and photographs. Reports for properties examined in 1985 have been published in Verschuren et al. (1986) and are not reproduced in this report. However, a table summarizing the features of the 1985 properties with moderate to good building stone potential is included in Appendix A.

Appendix B contains reports on all properties examined in 1986. All properties have been categorized as having good, moderate or poor potential for quarry block size, the most important factor in evaluating a building stone prospect. Property evaluations are discussed below under the following headings:

1. Ontario Gneiss Segment—granite
2. Central Metasedimentary Belt—granite, marble
3. St. Lawrence Platform—Paleozoic rocks

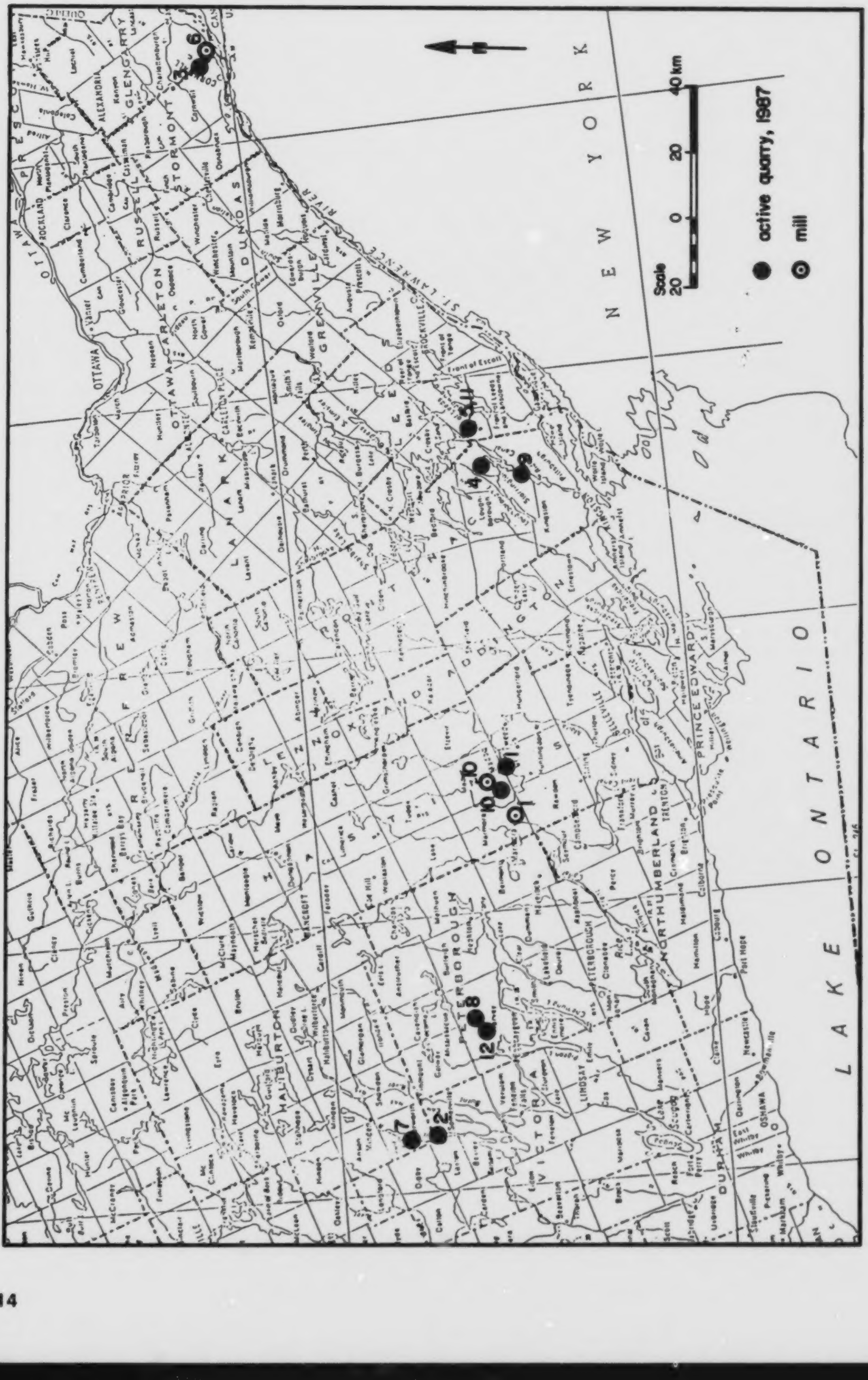
All properties are designated by year-township-site number, for example 86-KAL-004 (1986, Kaladar Township, site number 4)

DATA FORMS

The data forms used in the property examination reports include self-explanatory terms such as colour, grain size, texture, fabric, and so on, but also contain some terms which require further definition.

TABLE 4. EASTERN ONTARIO BUILDING STONE PRODUCERS (from Kingston et al. 1988).

Map Location No.	Company		Township	Rock Type	Commodity	Property Report No. (Appendix A)
1	Canada Talc Industries Ltd.	Henderson & Conley Mines	Huntingdon	Marble	Dolomitic marble terrazzo chips are produced from this talc mine	
2	Central Ontario Natural Stone		Somerville	Stone	Flagstone	
3	Cornwall Sand and Gravel		Cornwall	Limestone	Limestone blocks for dimension stone are produced from thick upper beds of this crushed stone quarry	
4	Fairmont Granite Ltd. and Granicor	Battersea Granite Quarry	Storrington	Granite	Granite blocks for dimesion stone. Blocks are processed at Beebe, Quebec	STO-01
5	Granimar Resources	Straw Hill Quarry	Rear of Leeds and Lansdowne	Granite	Granite waste from former dimension stone producer is used to produce decorative aggregate	RLL-01
6	Karnuk Marble Quarries Ltd.		Cornwall	Dimension Stone	This high technology dimension stone finishing plant produces tiles and panels of marble and granite purchased from quarries in Quebec, Ontario, and the U.S.	
7	MacDonald		Lutterworth	Stone	Flagstone	
8	Ormell Sand and Gravel		Harvey	Limestone	Flagstone is produced from this limestone aggregate quarry	
9	Sloan, N.	Sloan Quarry	Storrington	Sandstone	Sandstone building blocks (ashlar)	
10	Stoklosar Marble Quarries Ltd.		Madoc	Marble	Marble chips (terrazzo)	MAD-01 MAD-04
11	W.R. Barnes Company Limited		Rear of Leeds and Lansdowne	Granite	Decorative aggregate is produced from former dimension stone quarry	RLL-02
12	Windover, N.		Harvey	Limestone	Flagstone	



N
Scale
20
0
20
40 km
● active quarry, 1987
⊙ mill
1
2
3
4
5
6
7
8
9
10
11
12
NEW YORK
LAKE ONTARIO
ST. LAWRENCE RIVER
OTTAWA RIVER
QUEBEC
PRESCOTT
GLENGARRY
STORMONT
DUNDAS
RUSSELL
CARLETON
OTTAWA
GRENVILLE
LEEDS
LANARK
RENFREW
FRONTENAC
LENNOX AND ADDINGTON
HASTINGS
PRINCE EDWARD
NORTHUMBERLAND
PETERBOROUGH
VICTORIA
HALIBURTON
DURHAM
BROCKVILLE
KINGSTON
BELLEVILLE
TRENTON
LINDSAY
OSHAWA
ALEXANDRIA
ROCKLAND
CARLETON PLACE
BANCROFT

Figure 3. Locations of eastern Ontario building stone producers (see Table 4 for list of building stone producers).

Jointing

Regular Pattern - a pattern of one or more joint sets, recurring joint planes of relatively uniform strike and dip. Orthogonal jointing is a regular pattern composed of two joint sets at about 90 degrees.

Irregular Pattern - randomly oriented joint planes, often discontinuous or curved.

Limited Jointing: average spacing greater than 1.5 m.

Moderate Jointing: average spacing 0.5 to 1.5 m.

Intensive Jointing: average spacing less than 0.5 m.

Orientations of dominant joint sets were recorded where possible, except where the rocks showed irregular, intensive jointing.

Potential for Quarry Blocks

The potential quarry block size depends on the nature and intensity of the joint pattern:

Joint Pattern	Quarry Block Potential
Regular, Limited	Good
Regular, Moderate	Moderate
Regular, Intensive	Poor
Irregular	Poor

Possible Uses

In general, the possible uses are determined by potential quarry block size. Texture, colour and deleterious mineral content may also limit the possible uses of a stone. Rock with good quarry block potential is usually considered as possible architectural and monumental stone. Monumental stone may also be produced from a rock with moderate quarry block potential. Rock with poor quarry block potential has possible uses as ashlar, curbing stone, paving stone, flagstone, ornamental stone, landscaping stone, and rubble, all of which can also be produced from waste rock of an architectural and/or monumental stone quarry.

Use of Explosives

Previous use of explosives may have produced serious fracturing which can affect future quarrying. High velocity explosives used to construct highway roadcuts produce intense fracturing. Low velocity explosives, such as "black powder", are generally less damaging and are commonly used in building stone quarries (Verschuren et al. 1986). Local fracturing due to explosives can lead to underestimation of potential quarry block size of a building stone prospect.

ONTARIO GNEISS SEGMENT

All of the 19 building stone prospects examined in the Ontario Gneiss Segment are granites. Four areas having moderate to good building stone potential are recommended for further investigation and are described below (Verschuren et al. 1986).

NORTH BAY–POWASSAN AREA

Two properties in South Himsworth Township within the granitic to monzonitic Powassan batholith display limited jointing with massive texture and marketable colours (SHIM-01, 02). A third property in Strong Township (STR-01) is a moderately jointed, grey, porphyritic monzonite, possibly the southern extension of the Powassan batholith. The entire Powassan batholith, particularly the more massive interior, is strongly recommended for further exploration.

NOELVILLE–BURWASH AREA

The Cosby batholith (85-COS-01) is a moderately jointed, dark pink to brown, monzonitic intrusion. The margins are intensely deformed and gneissic, but the interior is massive to weakly foliated and shows good building stone potential.

BRACEBRIDGE–PORT CARLING AREA

A garnet-biotite-quartz-feldspar gneiss exposed on Highway 118 west of Bracebridge shows regular jointing which is variable but locally limited in intensity (86-MUS-O2). About 6 km west of 85-MUS-O2, massive to weakly foliated monzonite is exposed along Highway 118 at Brandy Lake. Further investigation of both rock types is recommended.

BAXTER TOWNSHIP

Properties 85-BAX-01 and 03 west of Port Severn are granitic gneiss with regular, limited joint patterns. Mineralogical and textural inconsistencies may limit the potential use of the stone to structural applications. However, the high potential for large quarry blocks in the area suggests that further exploration is warranted.

Several other areas recommended for exploration based on a study of geologic reports are described in Verschuren et al. (1986). Additional work on building stone potential in the Ontario Gneiss Segment is currently being conducted by the Ministry of Northern Development and Mines, Dorset (Marmont and Johnston 1987).

CENTRAL METASEDIMENTARY BELT

Granite

A total of 187 granite prospects were examined in the Central Metasedimentary Belt, 35 in 1985 and 152 in 1986. A table of the properties and their building stone potential is included in Appendix C, listed alphabetically by pluton name, followed by the remaining properties (in unnamed plutons or nonplutonic rocks) listed alphabetically by township. The 1986 property examination reports (Appendix B) are arranged in the same order and include a summary report on each pluton. Figure 4 shows the locations of the plutons examined in 1985 and 1986, listed in Table 5.

Table 6 lists the granite prospects considered to have moderate to good potential for building stone development. It should be noted that the potential of the

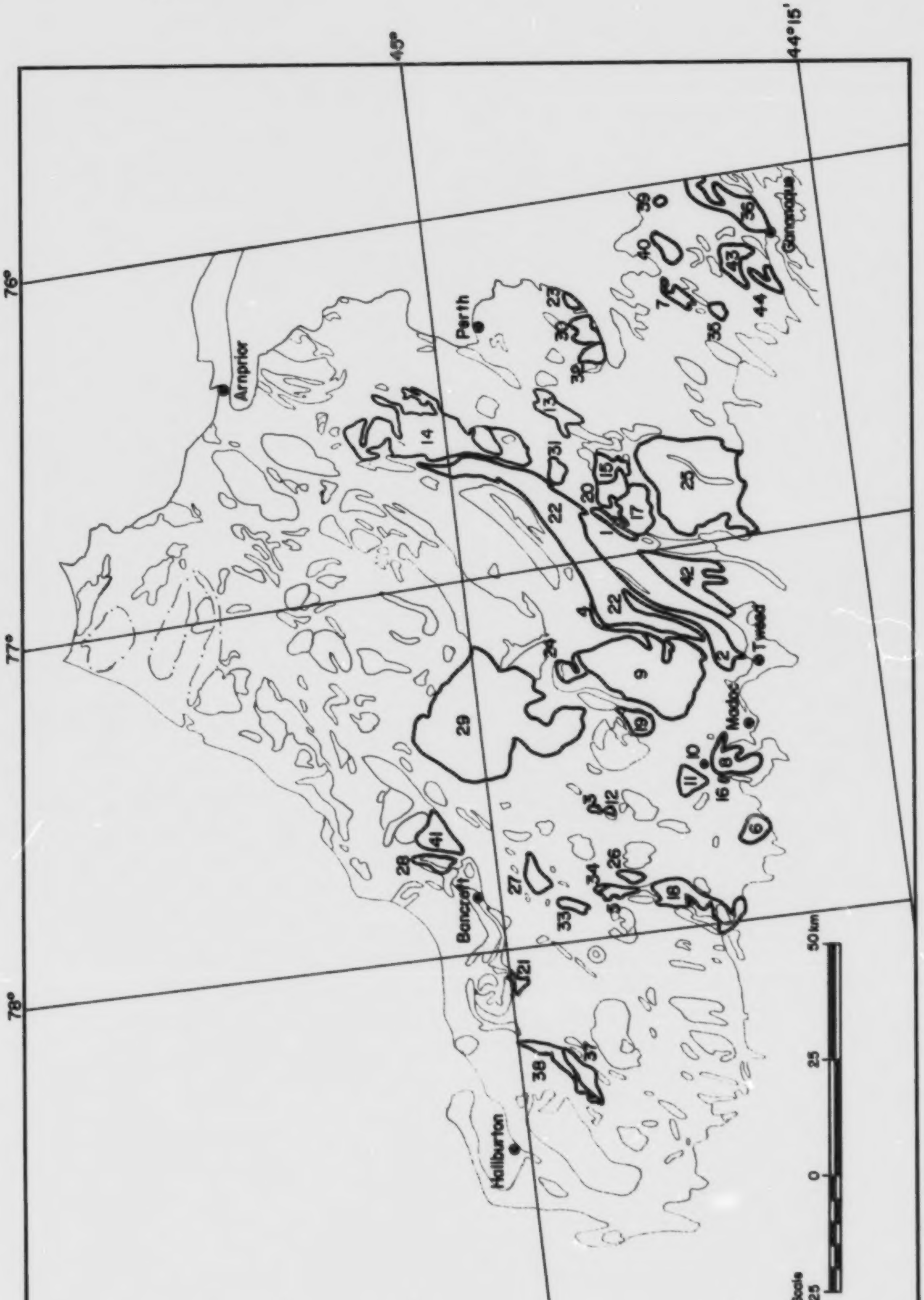

45°
44°15'
76°
77°
78°
Arnprior
Perth
Gananoque
Tweed
Madoc
Bancroft
Haliburton
Scale
25
0
25
50 km

***Figure 4.** Pluton map of the Central Metasedimentary Belt showing plutons examined in 1985–86 Building Stone Survey (from Geological Survey of Canada Map 1533A - Plutonic Rocks in Ontario).*

TABLE 5. PLUTONS EXAMINED, 1985–86 BUILDING STONE SURVEY.

1986 Pluton No.	Name
1	Abbotts Hill
2	Addington
3	Beaver Creek
4	Bishop Corners (Formation)
5	Coe Hill
6	Cordova
7	Crow Lake
8	Deloro
9	Elzevir
10	Empey
11	Gawley Creek
12	Glanmire
13	Lanark – Oso
14	Lavant
15	Leggat Lake
16	Malone
17	McLean
18	Methuen and Belmont
19	Mount Moriah
20	Mountain Grove
21	Newboro
22	Northbrook
23	Rideau Lake
24	Skootamatta Lake
25	Tamworth, Bellrock, Wilkinson, First Depot

1986 Pluton No.	Name
26	The Ridge
27	Umfraville
28	Wadsworth
29	Weslemkoon
30	Westport
31	White Lake
32	Wolfe Lake
33	Wollaston Granite
34	Wollaston Lake Gabbro

1985 Pluton No.	Name
35	Battersea
36	Gananoque
37	Glamorgan
38	Gooderham
39	La Rose Bay
40	Lyndhurst
41	Mallard Lake
42	Sheffield
43	Taylor
44	Pittsburg

TABLE 6. GRANITE PROSPECTS WITH MODERATE TO GOOD BUILDING STONE POTENTIAL, CENTRAL METASEDIMENTARY BELT.

Pluton Name	Township	Property Report	Potential Moderate (M), Good (G)
Battersea	Storrington	85-STO-01*	G
Battersea	Storrington	85-STO-02	M–G
Coe Hill	Wollaston	85-WOL-01*	M
Coe Hill	Wollaston	86-WOL-007*	M
Coe Hill	Wollaston	86-WOL-008*	M
Coe Hill	Wollaston	86-WOL-010	M
Deloro	Marmora	86-MAR-007	M–G
Deloro	Marmora	86-MAR-008	G
Deloro	Marmora	86-MAR-009	M
Deloro	Marmora	86-MAR-010	M–G
Deloro	Marmora	86-MAR-011	M
Deloro	Marmora	86-MAR-013	M
Deloro	Madoc	86-MAD-010	M
Elzevir	Elzevir	86-ELZ-004	M
Gananoque	Front of Leeds and Lansdowne	85-FLL-04*	M
Gooderham	Monmouth	85-MON-01	G
La Rose Bay	Rear of Leeds and Lansdowne	85-RLL-04	M–G
Leggat Lake	Olden	86-OLD-005	M
Lyndhurst	Rear of Leeds and Lansdowne	85-RLL-01	G (active–dimension stone)
Lyndhurst	Rear of Leeds and Lansdowne	85-RLL-06	G
Lyndhurst	Rear of Leeds and Lansdowne	85-RLL-07	G
Lyndhurst	Rear of Leeds and Lansdowne	85-RLL-08	G
Mallard Lake	Dungannon	85-DUN-066	M
McLean	Olden	86-OLD-020	M
McLean	Olden	86-OLD-022	M
Mount Moriah	Grimsthorpe	86-GRI-005	G
Northbrook	Kennebec	86-KEN-004	M
Taylor	Front of Leeds and Lansdowne	85-FLL-01*	G
Taylor	Front of Leeds and Lansdowne	85-FLL-02*	G
Taylor	Front of Leeds and Lansdowne	85-FLL-05	G
	Burleigh	85-BUR-01	G
	Carlow	85-CARL-01	M–G
	Kaladar	85-KAL-01*	M–G
	Olden	86-OLD-025	G
	Raglan	85-RAG-01	G

* *Former dimension stone producing quarry.*

examination site does not necessarily reflect the potential of the intrusion as a whole. Because of time constraints and the reconnaissance nature of the survey, ease of access was an important factor in locating examination sites, therefore, some intrusions in which poor potential was observed may show higher potential in other parts of the intrusion. However, on a reconnaissance scale, the properties and plutons listed in Table 6 represent areas of least intense jointing, therefore, highest building stone potential. These properties and plutons, shown in Figure 5, can be broadly grouped into five areas based on geological subdivisions of the Central Metasedimentary Belt of Wynne-Edwards (1972) as follows:

1. Frontenac Axis East - Battersea, Gananoque, La Rose Bay, Lyndhurst and Taylor plutons
2. Frontenac Axis West - McLean pluton
3. Hastings Basin Central - Deloro, Elzevir, Mount Moriah and Northbrook plutons; 85-KAL-01, 86-KAL-009, and 85-OLD-25
4. Hastings Basin West - Coe Hill pluton and 85-BUR-01
5. Glamorgan–Cardiff Belt - Gooderham and Mallard Lake plutons; 85-CARL-01 and 85-RAG-01

Brief evaluations of the above areas are given below.

FRONTENAC AXIS EAST

This high-grade (granulite facies) metamorphic region has the highest building stone potential within the study area. The high metamorphic grade reflects temperature and pressure conditions which may have produced partial or complete melting of the rocks, allowing plutonic rocks to intrude with minimal resistance. Thus, the late tectonic intrusions were not highly stressed and have relatively limited joint patterns. The majority of Quebec granite quarries are also within areas of granulite facies metamorphism, suggesting that intrusions and gneisses within high grade metamorphic regions are primary targets for granite dimension stone.

The Frontenac Axis north of Kingston and Gananoque hosts numerous former producers and test quarries as well as the only current producers of dimension granite in eastern Ontario (Battersea quarry, Fairmont Granite Ltd. and the Straw Hill quarry, Granimar Resources).

FRONTENAC AXIS WEST

Three dome-shaped intrusions, the McLean, Mountain Grove and Leggat Lake plutons, lie within this area just east of the boundary between the Hastings Basin and the Frontenac Axis. The metamorphic grade in the area is lower than that in the Frontenac Axis East area. Wolff (1982) suggested that the intrusions are late tectonic in a high temperature regime of medium-grade metamorphism. The Mountain Grove mafic intrusion is the oldest of the three and is the most intensely jointed, showing poor building stone potential. The McLean and Leggat Lake granite plutons represent later stage intrusions possibly resulting from partial melting of the crust (Wolff 1982) and are less intensely jointed. The McLean pluton appears to have good building stone potential, particularly toward the interior. The Leggat Lake pluton, though more strongly jointed, also warrants further investigation.

HASTINGS BASIN CENTRAL

The central part of the Hastings Basin, including the Deloro, Mount Moriah, Elzevir and Northbrook plutons, represents the lowest metamorphic grade in the Central Metasedimentary Belt. The regional greenschist facies metamorphism has had little effect on the Deloro and Mount Moriah plutons, which are quite massive and equigranular. The larger Elzevir and Northbrook plutons are locally sheared and gneissic, but the reconnaissance survey indicates that massive, homogeneous zones suitable for building stone are present.

While deformation in areas of high metamorphic grade occurs continuously by ductile movement and recrystallization, the cooler, less ductile rocks of the Hastings Basin exhibit less recrystallization and more brittle deformation such as faulting and shearing (Wynne-Edwards 1972). It appears that the Deloro and Mount Moriah plutons are relatively unaffected by the regional metamorphism because the deformation took place in less competent metavolcanics and metasediments surrounding the plutons. For the same reason, smaller plutons or areas of volcanic rock within pressure shadows of intrusions may have building stone potential (85-OLD-25 and 85-KAL-01).

HASTINGS BASIN WEST

The Coe Hill granite is a late tectonic mesozonal intrusion in a zone of amphibolite grade metamorphism. The main fold axes in the area are northeast-southwest, but there is also strongly developed northwest-southeast cross folding (Hewitt 1962). The complex structure may have produced the generally irregular joint patterns seen in the intrusive rocks of the area. The Coe Hill granite hosts two former producers of granite dimension stone which had problems caused by irregular jointing, but the blocks were of a size suitable for monumental stone. Further exploration within the Coe Hill granite is warranted.

The Belmont granite in northwestern Belmont Township hosts a formerly producing quarry which was abandoned due to sheeting problems. However, the massive texture and limited vertical jointing suggest that further exploration in the Belmont granite is warranted.

GLAMORGAN–CARDIFF BELT

The Glamorgan–Cardiff belt of gneiss domes and associated plutons lies along the northwestern margin of the Central Metasedimentary Belt in a zone of amphibolite facies metamorphism. The gneisses are similar to those in the Ontario Gneiss Segment and may represent remobilized basement material (Wynne-Edwards 1972).

The Mallard Lake gabbro is predominantly coarse-grained hornblende-plagioclase gneiss but is lo-

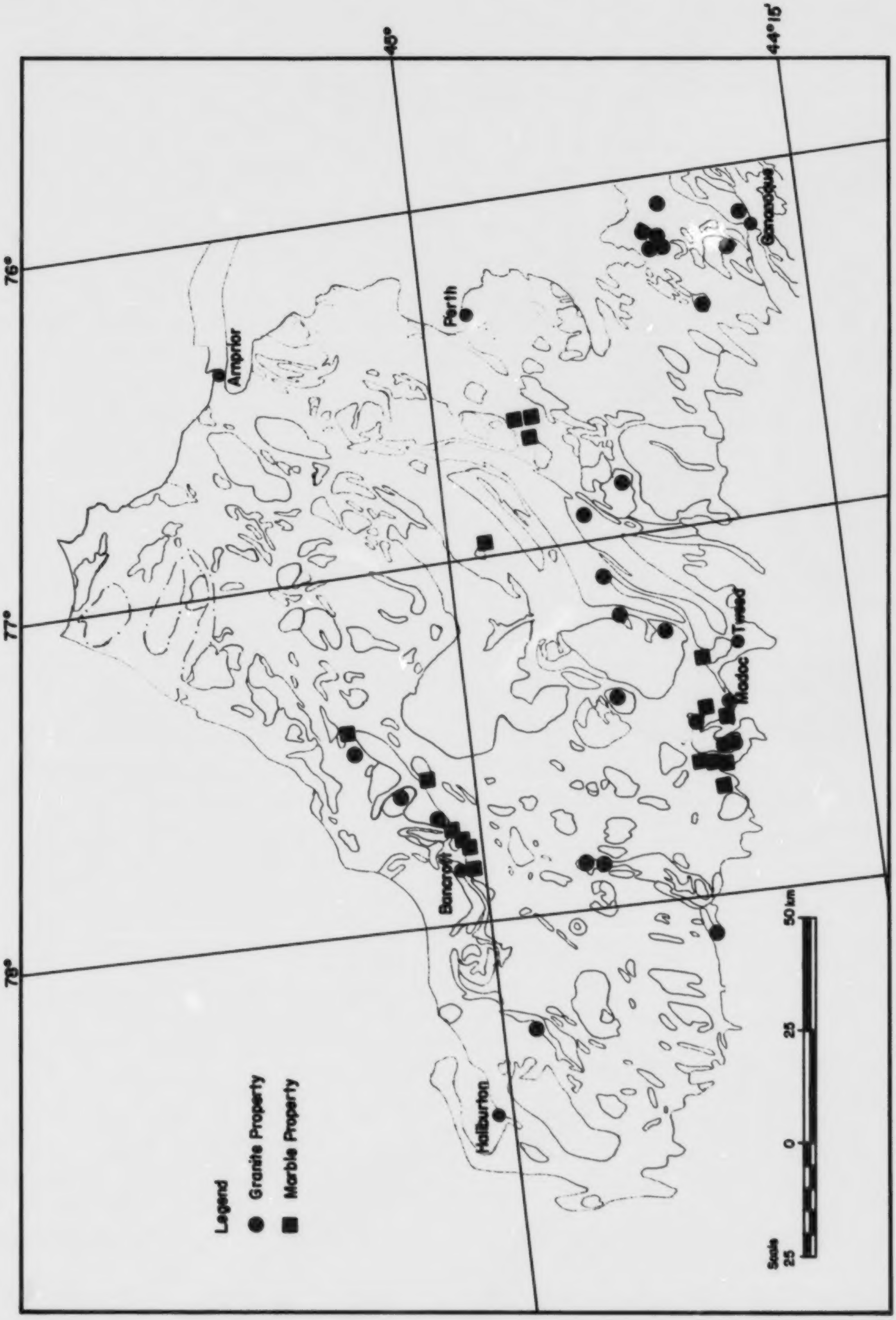

45°
44°15'
76°
77°
78°
Legend
● Granite Property
■ Marble Property
Haliburton
Bancroft
Madoc
Tweed
Perth
Arnprior
Gananoque
Scale
25
0
25
50 km

Figure 5. Locations of granite and marble properties with moderate to good building stone potential, Central Metasedimentary Belt.

cally a fresh-looking, massive quartz diorite (Hewitt and James 1956). The Gooderham granite hosts a former producer of monumental and paving stone. The lack of intense jointing at several sites in this belt may be related to the presence of marbles interlayered with gneisses and intrusions. The marble belts are considered by Culshaw (1986) to be zones of intense ductile shear. This deformation may have released a large part of the strain energy, leaving the more competent plutonic rocks relatively unaffected by the deformational stress. Properties 85-MON-01 and 85-RAG-01 have very good quarry block size potential, indicating that additional exploration in this area is warranted.

Marble

Table 7 lists the property reports and quarry block potential for marble prospects examined during the 1985-86 building stone survey. The 1986 property reports are included in Appendix B; 1985 reports are published in Verschuren et al. (1986) and are summarized in Appendix A of this report.

The quarry block potential indicates only the potential for use as architectural or structural stone. Properties with poor quarry block potential may be of interest as sources of crushed stone for landscaping or terrazzo, depending on their colour and texture. Stoklosar Marble Quarries Ltd. currently operates several small quarries in the Madoc area to obtain a variety of coloured marbles for terrazzo chips.

TABLE 7. MARBLE PROSPECTS EXAMINED, 1985-86 BUILDING STONE SURVEY.

Township	Property Report	Quarry Block Size Potential Poor (P) Moderate (M) Good (G)
Clarendon	86-CLA-001	G
Darling	85-DAR-01*	P-M
Dungannon	85-DUN-01*	M
	-02*	G
	-05	P
	-06	M
	-06c	P
	86-DUN-001	P
Faraday	86-FAR-020*	M
	-021*	M
Hungerford	85-HUG-02*	M-G
Huntingdon	85-HUN-04	G (active-terrazzo)
Kennebec	86-KEN-030	P-M
Madoc	85-MAD-01	P (active-terrazzo)
	-04*	P
	86-MAD-030	M
Marmora	85-MAR-02	G
	-03*	G
	-04*	M-G
	86-MAR-020*	P
Mayo	85-MAY-02	M
Olden	86-OLD-026	P
Oso	86-OSO-010	M
	-011	M
	-012*	M
Raglan	85-RAG-02	M-G
Ross	86-ROSS-001	P-M
Somerville	85-NOR-01	P

* *Former producing quarry.*

Marble prospects with moderate to good quarry block potential, shown in Figure 5, are concentrated in three areas: the townships of Madoc-Marmora, Oso, and Dungannon-Mayo. Because of the small number of properties examined, many of which are formerly producing quarries, these areas may represent only a small portion of the Central Metasedimentary Belt with potential for marble building stone development. Properties in Raglan and Clarendon townships, areas with no production history, show good potential for large quarry blocks, therefore, other marble-rich areas in addition to those described below should be examined for building stone potential. The distribution of marble belts in eastern Ontario is shown in Figure 6.

MADOC-MARMORA AREA

Metasomatic alteration of calcitic marbles surrounding the Deloro pluton has produced a wide range of colours including white, pink, green, blue-grey, and black. These are currently quarried only for terrazzo chips, but several sites appear suitable for the production of large quarry blocks.

OSO TOWNSHIP

Pale grey to white, calcitic and dolomitic marbles in this area show moderate quarry block size potential. One quarry has produced an attractive banded marble on a small scale. Further investigation of the Oso Township area is warranted.

DUNGANNON-MAYO AREA

Dolomitic marbles of various colours and textures have been quarried in this area. Some of this stone (85-DUN-01 and 02) was used as interior decorative stone in the parliament buildings in Ottawa. Colours include white, green, brown, grey, and blue in massive, banded, and brecciated textures.

CLARENDON TOWNSHIP

Property 86-CLA-001 shows very good building stone potential in terms of both quarry block size and aesthetic appeal. It is a white and pale-brown banded to fragmental calcitic marble from which a banded or mottled appearance can be obtained, depending on the direction of the cut. Further investigation of this site and of the Clarendon area marbles in general is warranted.

HUNGERFORD TOWNSHIP

The Tweed Marble Quarry (85-HUG-02), operated in the 1960s by the Vermont Marble Company, produced four varieties of marble for architectural uses. White-grey to pale green dolomitic marble of massive, nodular, and weakly banded textures was extracted in blocks ranging from 5 to 15 tons. The quarry appears to have potential for further production, and additional exploration in the area is warranted.

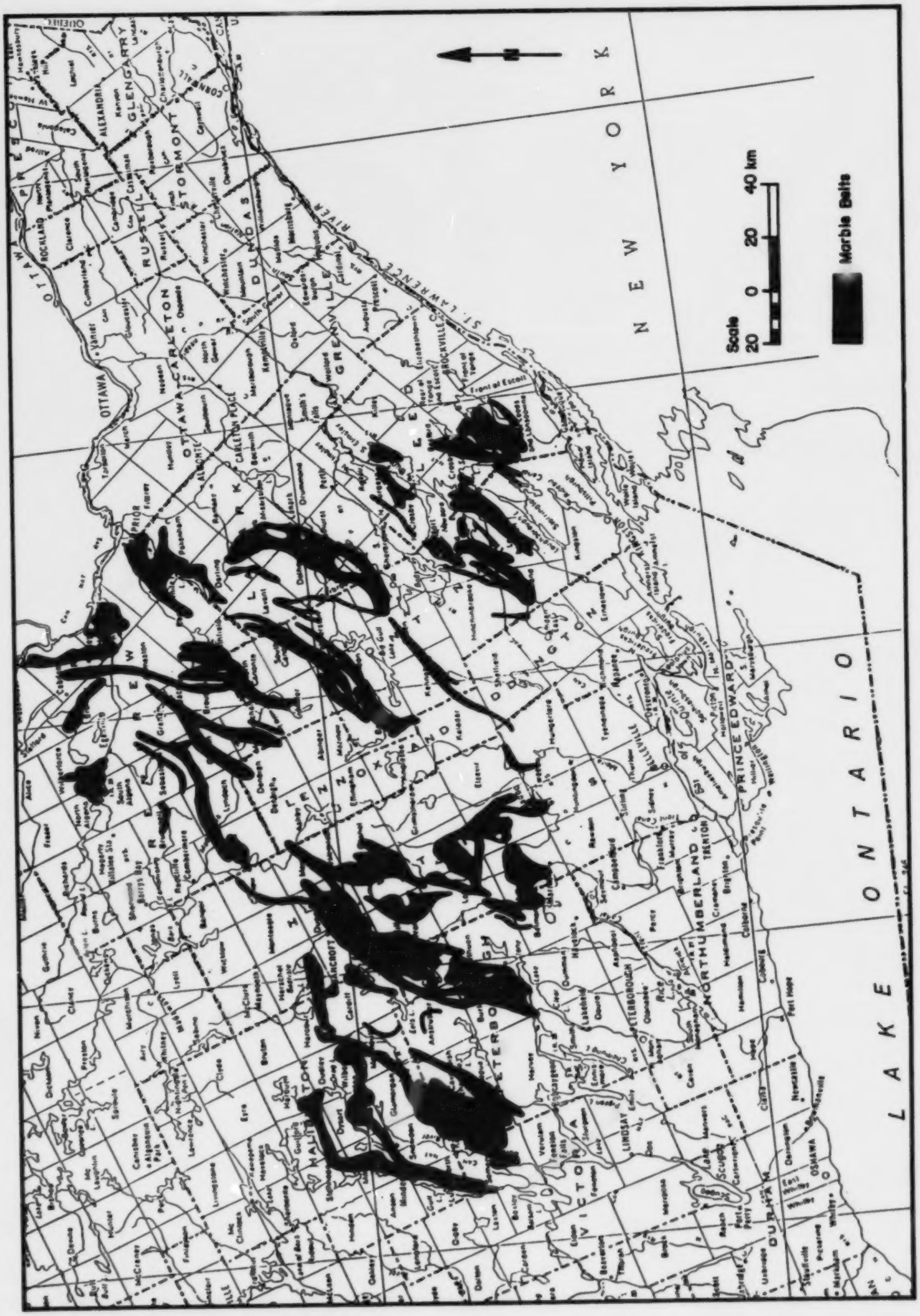

N
Scale
20 0 20 40 km
Marble Belts
NEW YORK
LAKE ONTARIO
ST. LAWRENCE RIVER
OTTAWA
QUEBEC
GLENGARRY
STORMONT
DUNDAS
RUSSELL
CARLETON
GRENVILLE
LEEDS
FRONTENAC
LENNOX AND ADDINGTON
HASTINGS
PRINCE EDWARD
NORTHUMBERLAND
PETERBOROUGH
VICTORIA
DURHAM
HALIBURTON
RENFREW
LANARK
BANCROFT
BELLEVILLE
TRENTON
LINDSAY
OSHAWA
BROCKVILLE

Figure 6. Distribution of marble belts in eastern Ontario (from Grant and Kingston 1989).

RAGLAN TOWNSHIP

White to pale blue-grey, coarse-grained, calcitic marble (85-RAG-02) shows moderate quarry block size potential. Further examination of the area is recommended.

ST. LAWRENCE PLATFORM

Paleozoic Rocks

Limestone properties examined during this study are listed and rated for potential quarry block size in Table 8. These properties, in Paleozoic rocks of the Bobcaygeon and Gull River formations, are all located at formerly or currently producing quarries. Some limestones can be classified as commercial marbles depending on their ability to take and sustain a polish. Three samples of Bobcaygeon Formation limestone polished for this study do not polish sufficiently well to be classified as commercial marble due to irregular, soft, shaly partings. The limestone does, however, have potential as structural building stone, ashlar, flagstone, terrazzo chips, and crushed stone, all of which have been produced from quarries within Gull River and Bobcaygeon limestones.

East of the study area, Bobcaygeon Formation limestone is being quarried as commercial marble. Karnuk Marble Quarries Ltd. of Cornwall produces a black marble tile from dark grey limestone quarried in Cornwall Township. This product is being successfully marketed as a domestic replacement of black marble imported from Spain (Michael DiGirolamo, Karnuk Marble Quarries Ltd., personal communication, March 1988).

TABLE 8. LIMESTONE PROSPECTS EXAMINED, 1985–86 BUILDING STONE SURVEY.

Township	Property Report	Quarry Block Size Potential Poor (P) Moderate (M) Good (G)
Huntingdon	85–HUN –01	G
	–02	G
	–03	M–G
Madoc	85–MAD –02	M
	–03	M
	–05	P
	–07	P
Marmora	85–MAR –01	M
Pakenham	85–PAK –01	M–G
Thurlow	86–THUR –001	P (active–aggregate)

1985 property reports are summarized in Appendix A.

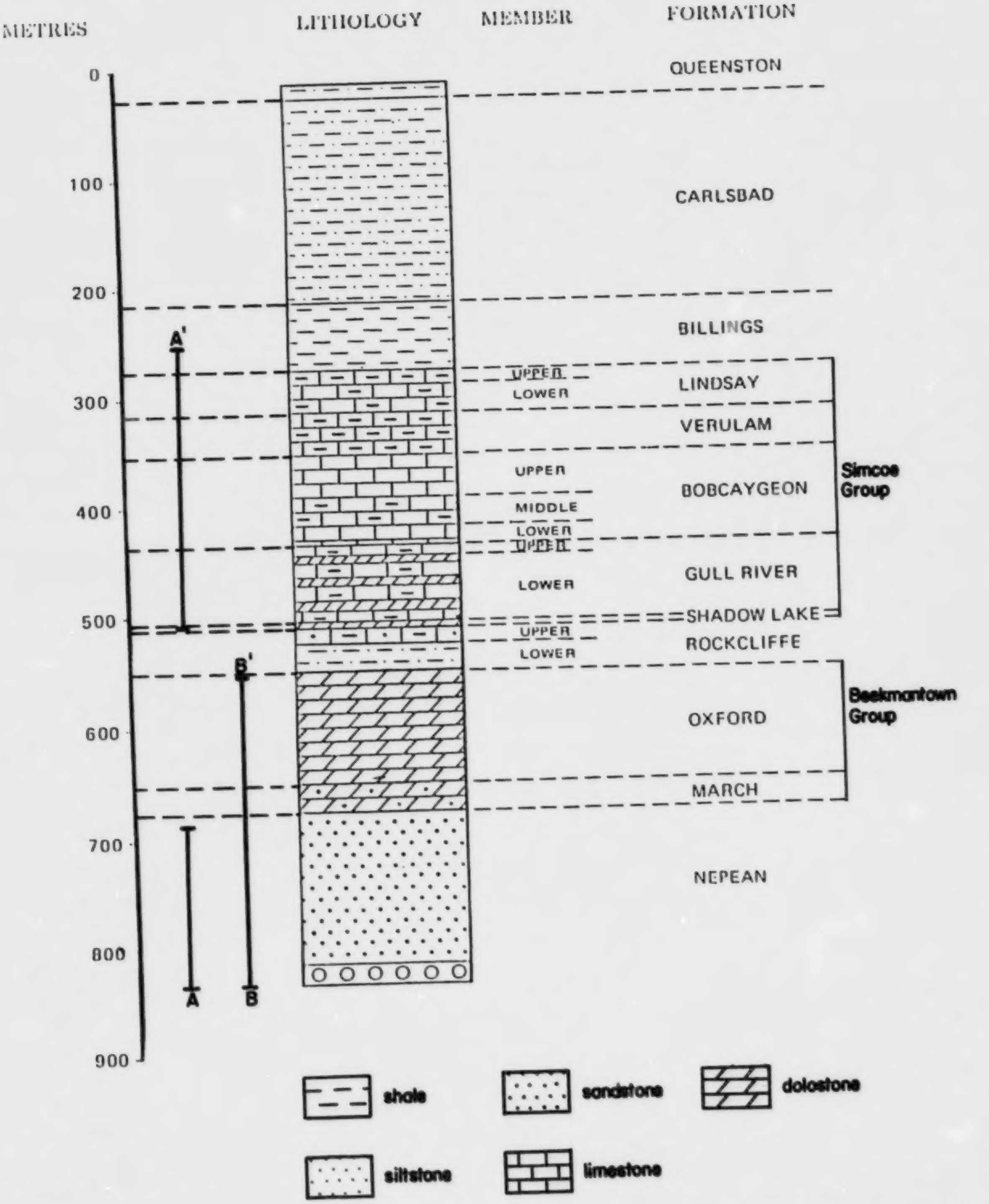
Other Paleozoic rocks within the study area which have been quarried for building stone include thickly bedded dolostone of the Oxford Formation (Beekmantown Group) and Nepean Formation or Potsdam Formation sandstone. Oxford Formation dolostone exposed east of the Frontenac Axis has been used as rough building stone and aggregate. Ashlar is produced from sandstone at the Sloan Quarry in Storrington Township at the western margin of the Frontenac Axis (Hewitt 1972).

Figure 7 shows the Paleozoic stratigraphy within the study area and Figure 8 shows the distribution of these formations. Based on the requirements of thick bedding and lack of shaly partings, the formations with best potential for development as structural building stone or commercial marble are the limestones of the lower Bobcaygeon Formation and the dolostones of the Oxford Formation.

RESULTS OF ASTM TESTS

A total of six granite and three marble samples were submitted to ASTM tests to determine whether the rocks meet ASTM specifications for building stone. The tests were performed by the Mineral Sciences Laboratories of CANMET (Mineral and Energy Technology Division of Energy, Mines and Resources, Canada). Test results are summarized in Table 9. A complete report on test procedures and results by R.L. Chevrier of MSL-CANMET is included in Appendix D.

All samples meet the ASTM requirements for granite and marble building stone with the exceptions of sample 31 from property 85-HUG-02 (Tweed Marble Quarry) which has a slightly lower than required abrasion resistance and sample 71 from 86-OSO-012 which fails to meet the specified value for modulus of rupture. However, a promotional brochure on Tweed Marble (*in* Kingston et al. 1985) lists the abrasion resistance as 19, indicating that physical properties may vary considerably within a deposit due to variations in texture, mineralogy and fracturing. In general, the granites and marbles of the area meet the physical requirements of the building stone industry, and ASTM testing need not be considered until a prospect has been judged to be sufficiently favourable with respect to colour, texture and jointing to warrant a test quarry.


METRES
LITHOLOGY
MEMBER
FORMATION
0
100
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500
600
700
800
900
QUEENSTON
CARLSBAD
BILLINGS
UPPER
LOWER
LINDSAY
VERULAM
UPPER
MIDDLE
LOWER
BOBCAYGEON
UPPER
LOWER
GULL RIVER
SHADOW LAKE
UPPER
LOWER
ROCKCLIFFE
OXFORD
MARCH
NEPEAN
Simcoe Group
Beekmantown Group
A'
A
B'
B
shale
sandstone
dolostone
siltstone
limestone

Figure 7. Paleozoic stratigraphy in southeastern Ontario (from Williams and Telford 1986). The column represents stratigraphy of the Geological Survey of Canada, Russel well, near Ottawa. Bars AA' and BB' indicate formations present within the study area west of the Frontenac Axis (AA') and east of the Frontenac Axis (BB').

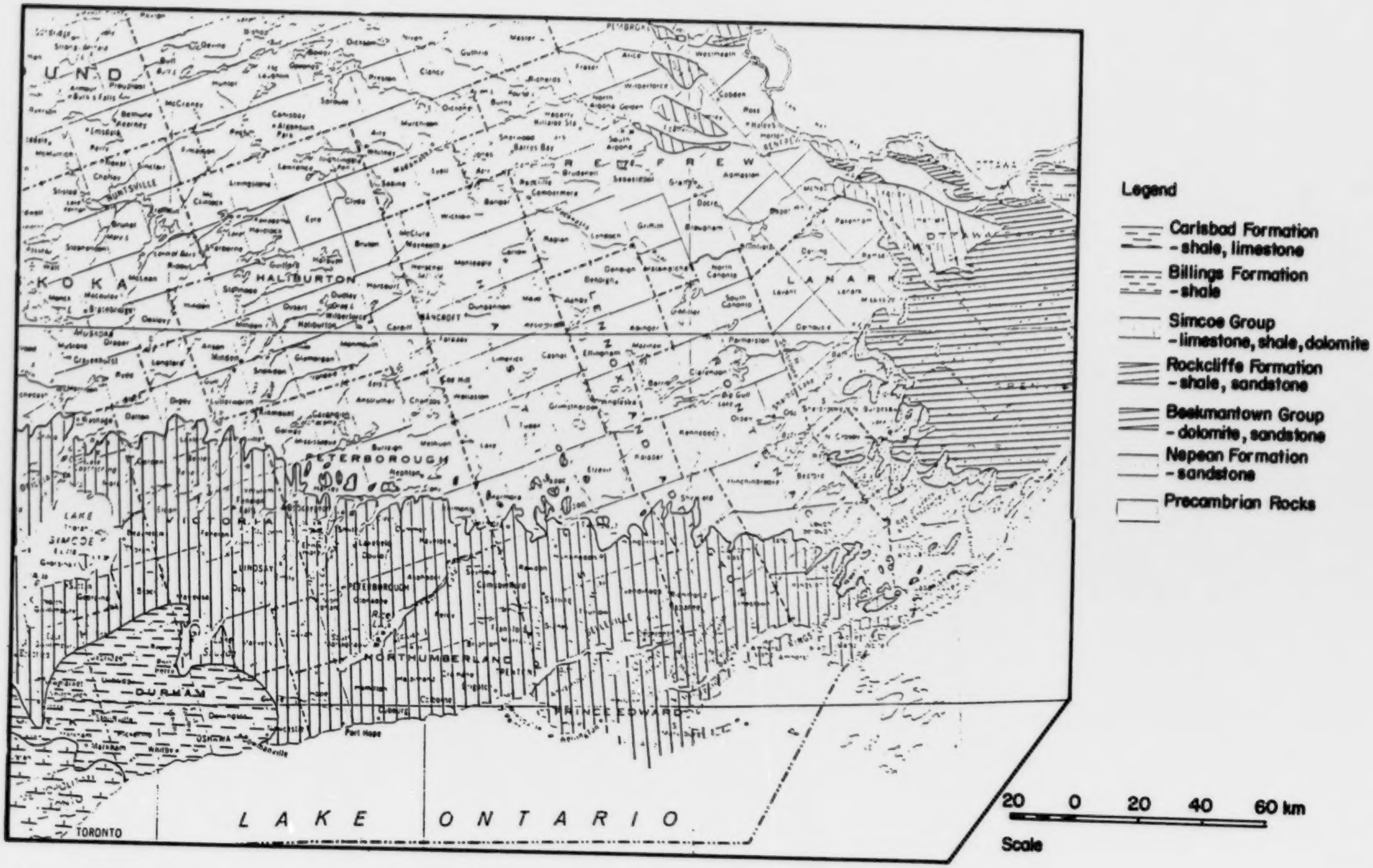
Legend
Carlsbad Formation - shale, limestone
Billings Formation - shale
Simcoe Group - limestone, shale, dolomite
Rockcliffe Formation - shale, sandstone
Beekmantown Group - dolomite, sandstone
Nepean Formation - sandstone
Precambrian Rocks
20
0
20
40
60 km
Scale
LAKE ONTARIO
TORONTO
HALIBURTON
PETERBOROUGH
VICTORIA
NORTHUMBERLAND
DURHAM
PRINCE EDWARD
RENFREW
LANARK
LAKE SIMCOE
LINDSAY
BANCROFT
PEMBROKE
OSHAWA

Figure 8. Paleozoic geology map, eastern Ontario (after Hewitt 1972).

Summary

Several areas of Precambrian rock in eastern Ontario have been identified as having good potential for building stone deposits. Although large areas with consistent colour, texture, and joint patterns are rare because of the complex metamorphic and structural history of the Grenville rocks, local metamorphic and/or structural conditions have produced areas with potential for development of building stone deposits of moderate size. With respect to granite, these include areas of high-grade metamorphism (Frontenac Axis) in which high temperatures have allowed the intrusion of plutonic rocks with little resistance, and lower grade areas in which relatively incompetent rocks such as marbles have absorbed tectonic stresses through deformation, leaving the more competent plutonic rocks relatively undeformed (Hastings Basin, Glamorgan–Cardiff Belt).

Marbles of the Central Metasedimentary Belt, particularly the Hastings Basin, locally show good potential for dimension stone as well as for crushed rock and terrazzo chips. Because of inconsistent colours and textures caused by tight folding, the potential for large quarries is not high, but deposits of marketable stone in quantities sufficient to fill the needs of domestic markets are present within the study area.

The increase in demand for building stone in both commercial and residential markets and improvements in stone processing technology have made the development of smaller quarries more economically feasible than in the past. Several areas of moderate to good building stone potential, described in this report, warrant further investigation and other areas in eastern Ontario with similar geologic characteristics should also be considered as exploration targets.

Appendix A. 1985 Property Report Summaries[1]

ONTARIO GNEISS SEGMENT

1. Granite properties with limited to moderate jointing

Property No.	Township	Colour	Texture	Rock Type	Status
BAX-01	Baxter	pink-grey	gneissic, variable	granitic gneiss	prospect
BAX-03	Baxter	pink-grey	gneissic, variable	granitic gneiss	prospect
CAR-01	Carling	pink	gneissic, variable	granitic gneiss	prospect
COS-01	Cosby	brown	massive, uniform	quartz monzonite	prospect
MUS-02	Muskoka Lakes	pink	gneissic, uniform	granitic gneiss	prospect
RYE-01	Ryerson	grey	gneissic, variable	granitic gneiss	prospect
SHIM-01	South Himsworth	greenish mauve-brown	porphyritic, uniform	syenite	prospect
SHIM-02	South Himsworth	pink	porphyritic, uniform	quartz monzonite	prospect
STR-01	Strong	grey	gneissic, uniform	porphyritic gneiss	prospect

2. Granite properties with irregular or intensive jointing

Property No.	Township	Colour	Texture	Rock Type	Status
BAX-02	Baxter	black	massive, variable	mafic syenite	prospect
BAX-04	Baxter	pink-grey	gneissic, variable	granitic gneiss	prospect
CHI-01	Chisholm	pink-grey	gneissic, variable	granitic gneiss	prospect
CHI-02	Chisholm	pink-grey	gneissic, uniform	granitic gneiss	prospect
MCM-01	McMurrich	green-black	massive, uniform	mafic syenite	prospect
MUS-01	Muskoka Lakes	pink-grey	gneissic, variable	granitic gneiss	prospect
MUS-03	Muskoka Lakes	pink-grey	gneissic, variable	granitic gneiss	prospect
MUS-04	Muskoka Lakes	grey-black	foliated, variable	gabbro	prospect
RYE-02	Ryerson	green-black	massive, uniform	gabbro	prospect
RYE-03	Ryerson	green-black	massive, uniform	gabbro	prospect

CENTRAL METASEDIMENTARY BELT—GRANITE

1. Granite properties with limited to moderate jointing

Property No.	Township	Colour	Texture	Rock Type	Status
BUR-01	Burleigh	mauve-pink	variable, porphyritic, massive	porphyritic granite	prospect
CAR-01	Carlow	grey	massive, foliated	tonalite	prospect
DUN-06b	Dungannon	dark grey	massive, uniform	gabbro	prospect
FLL-01	Front of Leeds & Lansdowne	brown-red	massive, uniform	syenite	past producer
FLL-02	Front of Leeds & Lansdowne	pink	massive, uniform	syenite	past producer
FLL-04	Front of Leeds & Lansdowne	red-brown	massive, uniform	syenite	past producer
KAL-01	Kaladar	grey-green	massive, uniform	ultramafic	past producer
MON-01	Monmouth	pink	massive,	quartz monzonite	prospect
RAG-01	Raglan	pink	gneissic, variable	granitic gneiss	prospect
RLL-01, 02	Rear of Leeds & Lansdowne	pink-red	massive, uniform	granite	active quarry
RLL-04	Rear of Leeds & Lansdowne	grey	weak fol, uniform	quartz diorite	test quarry
RLL-06	Rear of Leeds & Lansdowne	brown	porphyritic, uniform	syenite	prospect
RLL-07	Rear of Leeds & Lansdowne	brown	foliated, uniform	syenite	prospect
RLL-08	Rear of Leeds & Lansdowne	pink	massive, uniform	quartz syenite	test quarry
STO-01	Storrington	pink	massive, uniform	granite	past producer
WOL-01	Wollaston	pink	massive, uniform	quartz syenite	past producer

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[1] *for more detailed property descriptions, see Verschuren et al. (1986).*

CENTRAL METASEDIMENTARY BELT—GRANITE

2. Granite properties with irregular or intensive jointing

Property No.	Township	Colour	Texture	Rock Type	Status
CAV-01	Cavendish	pink-brown	foliated, uniform	granite	prospect
CAV-02	Cavendish	grey-black	foliated, uniform	diorite-gabbro	prospect
ELI-01	Elizabethtown	pink-grey	massive, uniform	granite	prospect
ELI-02	Elizabethtown	pink-red	porphyritic massive	granite	prospect
FLL-03	Front of Leeds & Lansdowne	red-brown	massive, uniform	syenite	past producer
FLL-05	Front of Leeds & Lansdowne	grey-green to red	massive, uniform	syenite	past producer
FOE-01	Front of Escott	grey-brown	massive, variable	granite	prospect
FOE-02	Front of Escott	grey-black	massive to foliated	metasediment	prospect
FOY-01	Front of Yonge	brown	massive to foliated	syenite	prospect
GLA-01	Glamorgan	green-grey	foliated, uniform	gabbro	prospect
GLA-02	Glamorgan	grey	foliated, uniform	gabbro	prospect
HUG-01	Hungerford	pink-red	foliated, uniform	granite gneiss	past producer
PIT-01	Pittsburgh	brown	porphyritic variable	syenite	past producer
PIT-02	Pittsburgh	green-grey	gneissic, uniform	gneiss	past producer
RLL-05	Rear of Leeds & Lansdowne	buff-grey	massive, uniform	syenite	prospect
ROY-01	Rear of Yonge	pink-brown	massive, uniform	granite	prospect
STO-02	Storrington	pink	foliated, uniform	granite	prospect
WOL-02	Wollaston	black	massive, uniform	diabase	test quarry
WOL-03	Wollaston	black	massive, uniform	gabbro	prospect

CENTRAL METASEDIMENTARY BELT—MARBLE

1. Marble properties with limited to moderate jointing

Property No.	Township	Colour	Texture	Rock Type	Status
DUN-01	Dungannon	white to pale brown	massive, foliated	dolomitic marble	past producer
DUN-02	Dungannon	pale blue-brown-green	banded	dolomitic marble	past producer
DUN-06	Dungannon	dark grey-brown	massive-bedded	dolomitic marble	prospect
HUG-02	Hungerford	white-green	massive-foliated	dolomitic marble	past producer
HUN-04	Huntingdon	pale green to purple	uniform, massive	calcitic marble	active quarry
MAR-02	Marmora	pale green	massive, uniform	calcitic marble	prospect
MAR-03	Marmora	pale-dark green	foliated, variable	calcitic marble	past producer
MAR-04	Marmora	buff-pink-blue-grey	foliated, variable	calcitic marble	past producer
MAY-02	Mayo	white-brown	banded	dolomitic marble	prospect
RAG-01	Raglan	white to blue-grey	massive-foliated	calcitic marble	prospect

2. Marble properties with irregular or intensive jointing

DAR-01	Darling	white-green-grey	variegated	serpentinized marble	past producer
DUN-05	Dungannon	white-pale green	massive-foliated	dolomitic marble	prospect
DUN-06c	Dungannon	pink-white-green	banded	calcitic marble	prospect
MAD-01	Madoc	dark grey-black	massive to banded	calcitic marble	active quarry
MAD-04	Madoc	white-pink-grey	banded	calcitic marble	past producer
NOR-01	Somerville	white	massive-foliated	dolomitic marble	prospect

Appendix B. 1986 Property Examination Reports—Granite Properties

ABBOTTS HILL INTRUSION

LOCATION Southern Kennebec Township trending northeast into Olden Township near town of Mountain Grove

NTS 31 C/10 OGS Map 2449 Report 216

SAMPLE SITES 86-OLD-007, 86-OLD-008, 86-OLD-009, 86-KEN-007, 86-KEN-008, 86-KEN-009, 86-KEN-010

DESCRIPTION OF AREA

The Abbotts Hill intrusion runs northeast-southwest from Kennebec Township into Olden Township. The length of the intrusion is approximately 15 km along which three dominant rock types are encountered. The first rock type, found in the northern part of the intrusion, is mainly biotite granodiorite but some biotite quartz monzonite does occur. Towards the centre of the intrusion the rock trends toward a biotite trondjemite, and at the southern extent of the intrusion the rock becomes dominantly biotite quartz monzonite.

Three samples were taken from the northern end of the intrusion near Mountain Grove. These samples are 86-OLD-007, 008, 009. The rock here is a foliated, fine- to medium-grained biotite granodiorite that displays an unattractive greyish-brownish-pink colour.

Jointing in this area is very intense and varies from regular to irregular, limiting the potential for extraction of large quarry blocks.

Other deleterious features found in the area include the presence of pegmatite dikes, quartz pods and stringers, aplite dikes and some minor exfoliation. No deleterious minerals were noticed.

To the south of this area four more samples were taken (86-KEN-007, 008, 009, 010). These samples were also mainly biotite granodiorite. All features of this area appear to be similar to those of the northern part of the intrusion. The southern part of the intrusion is mainly biotite quartz monzonite. No samples were taken from this area due to access limitations.

CONCLUSIONS

The Abbotts Hill intrusion does not seem to favour the development of a building stone quarry. The rock found here is not particularly attractive and the intense jointing limits the area as far as large block extraction is concerned.

POTENTIAL

POOR	MODERATE	GOOD
86-OLD-007		
86-OLD-008		
86-OLD-009		
86-KEN-007		
86-KEN-008		
86-KEN-009		
86-KEN-010		

REFERENCE

Wolff, J.M. 1982. Geology of the Long Lake area; Ontario Geological Survey, Report 216, 76p.

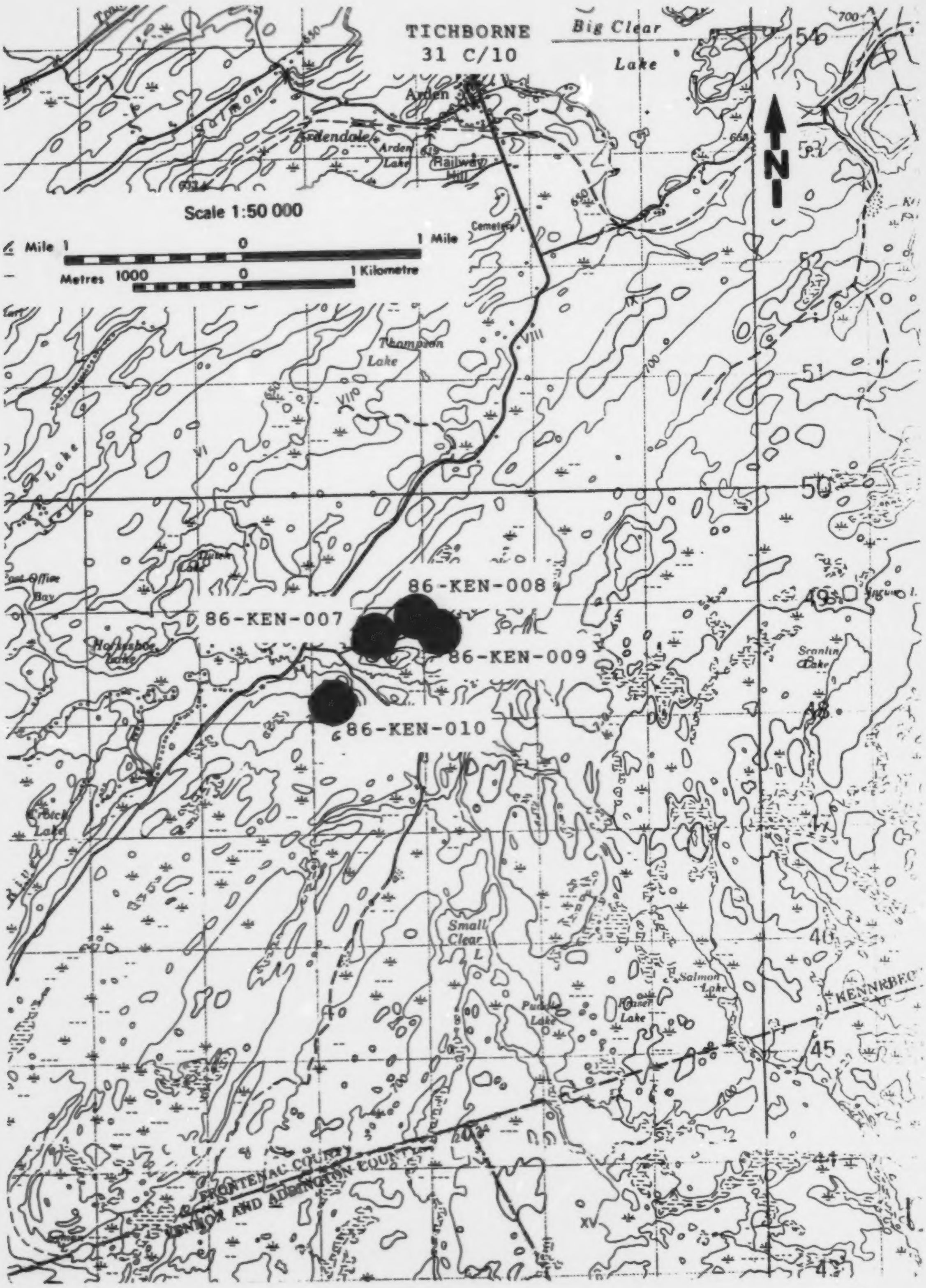
TICHBORNE
31 C/10
Big Clear
Lake
Arden
Ardendale
Arden Lake
Railway Hill
Salmon
Cemetery
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
Thompson Lake
Lake
Dutch Lake
Post Office Bay
Horseshoe Lake
Crotch Lake
River
86-KEN-007
86-KEN-008
86-KEN-009
86-KEN-010
Scanlin Lake
Small Clear L
Puddle Lake
Fraser Lake
Salmon Lake
KENNEBEC
FRONTENAC COUNTY
LENNOX AND ADDINGTON COUNTY
700
650
VI
VII
VIII
IX
XV
54
53
52
51
50
49
48
47
46
45
44
43

Figure B1. Sample locations, Abbotts Hill intrusion (sheet 1).

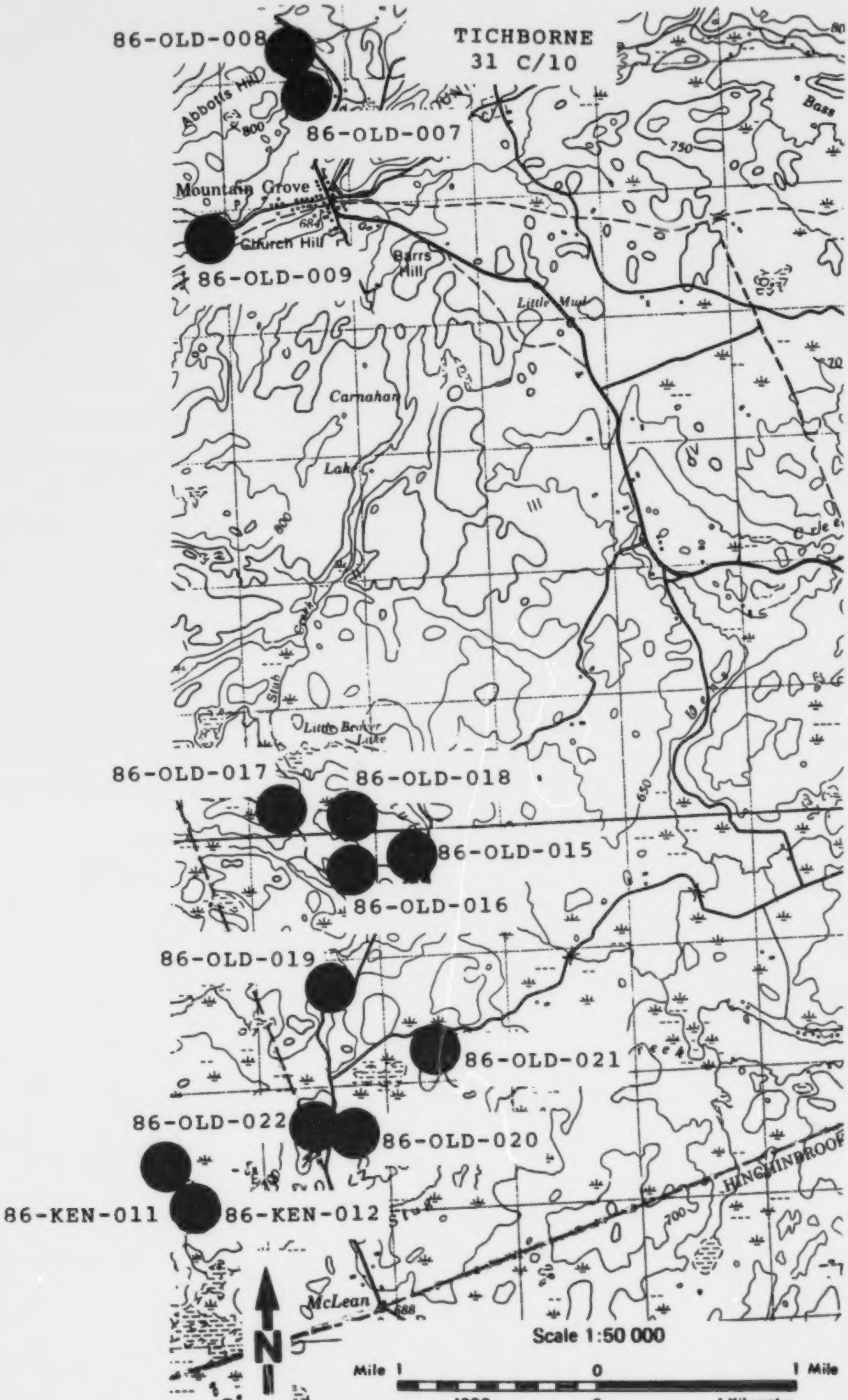
86-OLD-008
TICHBORNE
31 C/10
Abbotts Hill
800
86-OLD-007
Bass
750
Mountain Grove
684
Church Hill
Barrs Hill
86-OLD-009
Little Mud
Carnahan
Lake
800
Sluh Creek
Little Beaver Lake
86-OLD-017
86-OLD-018
650
86-OLD-015
86-OLD-016
86-OLD-019
86-OLD-021
86-OLD-022
86-OLD-020
HINCHINBROOKE
700
86-KEN-011
86-KEN-012
McLean
688
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B2. Sample locations, Abbotts Hill intrusion (sheet 2).

86-OLD-007

PROPERTY NO. 86-OLD-007 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Abbotts Hill 1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Olden LOT 14 CONC. 2

NTS 31 C/10 UTM CO-ORDINATES Easting 353700 Northing 4955900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4452-157-75

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark grey-brown
Weathered Surface Grey-pink
Uniform Variable X

WEATHERING DEPTH 1 mm

GRAIN SIZE fine to medium Uniform Variable X

TEXTURE (gneissic) Uniform Variable X

FABRIC Yes X No. Weak Mod. Strong X Strike 140 degrees
Dip 29 degrees E
Formed By Alignment of mafics, gneissosity

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 020 degrees Dip Vertical Spacing <1 m
B) Strike 120 degrees Dip Vertical Spacing <0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Biotite, quartz, K-spar, plagioclase

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Many pegmatite/quartz pods and stringers.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS The gneissosity has been deformed by macro folding. Intense jointing, numerous pegmatite dikes and quartz veining limit the possibility of procuring quarry blocks.

86-OLD-008

PROPERTY NO. 86-OLD-008 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Abbotts Hill 2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Olden LOT 14 CONC. 2

NTS 31 C/10 UTM CO-ORDINATES Easting 353550 Northing 49556200

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4452-157-75

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink with black
Weathered Surface Pink/grey
Uniform X Variable

WEATHERING DEPTH 2 to 3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 140 degrees
Dip 22 degrees SE
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

A)	Strike	140 degrees	Dip	vertical	Spacing	0.5 to 2 m 0.7 m avg.
B)	Strike	80 degrees	Dip	vertical	Spacing	up to 1 m
C)	Strike	horizontal	Dip	0 degrees	Spacing	0.1 to 0.5 m
D)	Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Quartz, plagioclase, biotite, K-spar

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Pegmatite dikes, numerous aplite dikes, quartz and granitic stringers, hematite staining.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS The rock contains numerous pegmatitic and aplitic phases, and quartz and granitic stringers and veins. Jointing is intense.

Photo B1. Overall view of outcrop depicting horizontal sheeting and good exposure. 86-OLD-008

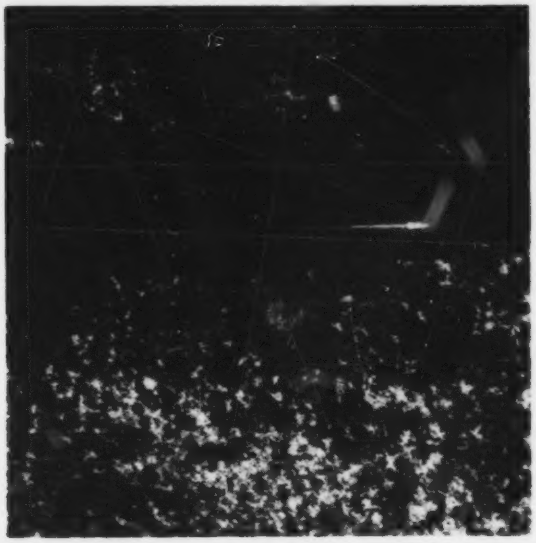

Photo B2. Granitic stringer with biotite quartz monzonite. 86-OLD-008

86-OLD-009

PROPERTY NO. 86-OLD-009 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Abbotts Hill 3 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Olden LOT 15 CONC. 2

NTS 31 C/10 UTM CO-ORDINATES Easting 352850 Northing 4954800

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4451-143-104

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Greyish-whitish pink
Weathered Surface Greyish white
Uniform Variable X

WEATHERING DEPTH 2 mm

GRAIN SIZE Fine to medium Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Gneissic layering

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 140 degrees Dip 90 degrees Spacing 0.1 to 2 m
0.5 m avg.
B) Strike 30 degrees Dip 90 degrees Spacing 0.1 to 2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Quartz, plagioclase, biotite, K-spar

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins, some pegmatite dikes, minor exfoliation.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Quartz veins and pegmatite dikes are predominant and jointing is intense. Gneissic banding is undeformed and uniform.

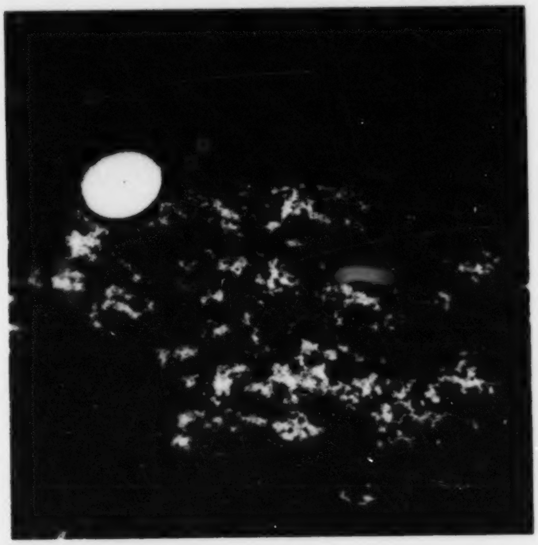

Photo B3. Fresh surface showing gneissic texture, fine to medium grain size, and greyish-white-pink colour. 86-OLD-009

86-KEN-007

PROPERTY NO. 86-KEN-007 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Horseshoe Lake 1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Kennebec LOT 7 CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 346450 Northing 4948750

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4447-130-99

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink with black
Weathered Surface Pink/grey
Uniform Variable X

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium to fine Uniform Variable X

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 0 degrees
Dip 30 degrees E
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 0 degrees Dip vertical Spacing 0.1 to 1 m
B) Strike 120 degees Dip vertical Spacing 0.2 to 0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Biotite quartz, plagioclase, K-spar, muscovite

DELETERIOUS MINERALS Yes X No Type (pyrite) Percent Trace

OTHER FEATURES Hematite staining, many pegmatitic feldspar quartz pods, pegmatite dikes, aplite inclusions, moderate exfoliation.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This outcrop exhibits considerable variation in both mineralogy and grain size. Other deleterious features include pegmatite and aplitic phases, intense jointing and hematite staining.

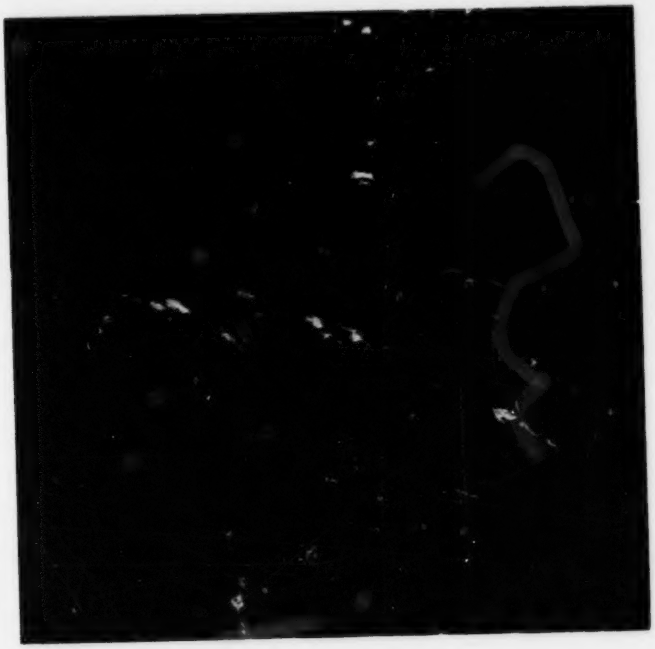

Photo B4. Overall view of outcrop area. Note irregular, closely spaced jointing. 86-KEN-007

86-KEN-008

PROPERTY NO. 86-KEN-008 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Horseshoe Lake 2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Kennebec LOT 7 CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 346950 Northing 4948900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4447-130-99

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Light pink/grey banded
Weathered Surface Pinkish grey
Uniform Variable X

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 5 degrees
Dip 46 degrees E
Formed By Gneissosity

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

	Strike		Dip		Spacing
A)	Strike	130 degrees	Dip	NR Vertical	Spacing 0.1 to 1 m
B)	Strike	5 degrees	Dip	46 degrees E	Spacing 0.1 to 2 m
C)	Strike		Dip		Spacing
D)	Strike		Dip		Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Biotite plagioclase, K-spar, quartz

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz feldspar pods and veins; moderate exfoliation, staining.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, gneissic granodiorite of the Abbotts Hill intrusion. The gneissosity has been deformed on a macro scale. The intense jointing and prevalent pegmatitic phases diminish the building stone potential.

86-KEN-009

PROPERTY NO. 86-KEN-009 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Horseshoe Lake 3 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Kennebec LOT 7 CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 347050 Northing 4948900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4447-130-99

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey with black
Weathered Surface Dark grey
Uniform Variable X

WEATHERING DEPTH 2 to 3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern (X) Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Biotite, K-spar, plagioclase, quartz

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veining, pegmatite pods, exfoliation.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS To the west, increasing plagioclase in the rock causes it to lose its "salt and pepper" appearance. Jointing is regular to irregular and spacing is difficult to correlate. Diorite is localized. This rock is a massive, medium-grained, grey granodiorite. Jointing is intense, limiting quarry block size. Few other deleterious features were observed.

86-KEN-010

PROPERTY NO. 86-KEN-010 PLUTON NAME Abbotts Hill Intrusion

PROPERTY NAME Horseshoe Lake 4 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granodiorite

TOWNSHIP Kennebec LOT 7 CONC. 6

NTS 31 C/10 UTM CO-ORDINATES Easting 346100 Northing 4548200

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4447 130-99

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Light pinkish grey
Weathered Surface Pink and dark grey
Uniform X Variable

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium/fine Uniform X Variable

TEXTURE Foliated to gneissic Uniform Variable X

FABRIC Yes X No. Weak Mod. X Strong Strike 20 degrees
Dip ?
Formed By Alignment of biotite, gneissosity

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 120 degrees Dip vertical Spacing 0.2 to 0.5 m
B) Strike 185 degrees Dip vertical Spacing 0.4 to 0.7 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Biotite, quartz, K-spar, plagioclase

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Aplite inclusions, many quartz-feldspar dikes (2 to 20 cm wide)

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Gneissosity results in pink and grey 1 to 5 cm banding locally. The rock is intensely jointed and heterogeneous.

ADDINGTON INTRUSION

LOCATION Extends through southern Kaladar, central Kennebec, and northern Olden townships

NTS 31 C/15 OGS Map 2471 Report 228

SAMPLE SITES 86-OLD-003, 86-OLD-004

DESCRIPTION OF AREA
The Addington intrusion in general is a band of foliated to gneissic biotite granite and quartz monzonite about 1 km wide trending northeasterly through several townships. The areas examined in Olden Township both lie within a wide shear zone mapped by Wolff (1985) along the southeastern margin of the intrusion. Although jointing is regular and moderate, pervasive shearing is accompanied by carbonate and clay mineral development, quartz veins, and rusty weathering.

CONCLUSIONS
Although the area examined shows little building stone potential due to shearing, the moderate, regular joint pattern suggests that there may be areas with better potential for quarry blocks toward the centre of the intrusion, away from the shear zone mapped by Wolff (1985).

POTENTIAL

POOR	MODERATE	GOOD
86-OLD-003		
86-OLD-004		

REFERENCES

Wolff, J.M. 1982. Geology of the Kaladar area, Frontenac, and Lennox and Addington counties; Ontario Geological Survey, Report 215, 94p.

---1985. Geology of the Sharbot Lake area, Frontenac and Lanark counties, southeastern Ontario; Ontario Geological Survey, Report 228, 70p.

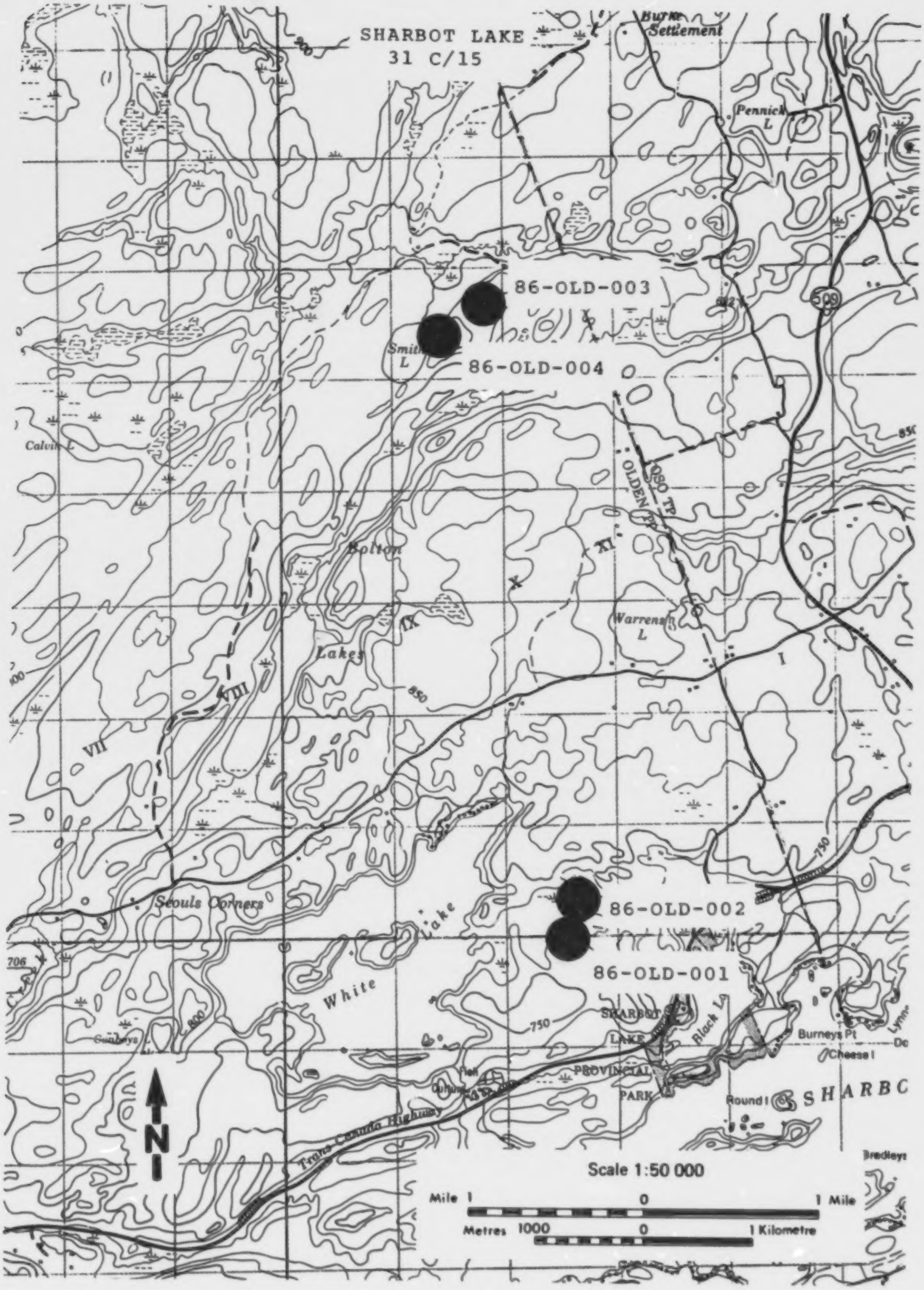
SHARBOT LAKE
31 C/15
Burke Settlement
Pennick L
86-OLD-003
86-OLD-004
Smith L
Calvin L.
OSO TP
OLDEN TP
Bolton
Lakes
Warrens L
IX
X
XI
VIII
VII
I
509
Seouls Corners
White Lake
86-OLD-002
86-OLD-001
SHARBOT LAKE PROVINCIAL PARK
Black L
Burneys Pt
Cheese I
Round I
SHARBC
Trans Canada Highway
N
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
850
750
800
706
Bradleys

Figure B3. Sample locations, Addington intrusion.

86-OLD-003

PROPERTY NO. 86-OLD-003 PLUTON NAME Addington Intrusion

PROPERTY NAME Smith Lake I COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 26 CONC. 10

NTS 31 C/15 UTM CO-ORDINATES Easting 361750 Northing 4965650

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4457-189-77

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Red
Weathered Surface Light pink with grey
Uniform X Variable

WEATHERING DEPTH 2 to 8 mm

GRAIN SIZE Medium to coarse Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 10 degrees Dip
Dip 10 degress E
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 120 degrees Dip Vertical Spacing 0.2 to 2 m
B) Strike 30 degrees Dip Vertical Spacing 0.5 to 2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Carbonate and clay minerals coat the slip planes, (rusty weathering) minor sheeting, pegmatite dikes 15 cm.

POSSIBLE USES Curbing stone, ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a moderately foliated, medium-grained, dark red granite. The carbonate and clay minerals present on shear planes weather to a rusty colour. Jointing occurs in regular patterns of moderate spacing, but the shear planes are pervasive and would limit quarry block size.

***Photo B5.** General view of dark red granite exhibiting regular jointing and good exposure. 86-OLD-003*

86-OLD-004

PROPERTY NO. 86-OLD-004
PLUTON NAME Addington Intrusion

PROPERTY NAME Smith Lake II
COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden
LOT 25 **CONC.** 10

NTS 31 C/15 **UTM CO-ORDINATES** Easting 361400 Northing• 4965350

PROPERTY STATUS Prospect
AIR PHOTO NO. 73-4457-189-77

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Red
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH ≤0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated (planar fabric due to shearing) Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Alignment of biotite, quartz, feldspar

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing X

	A) Strike	30 degrees	Dip 85 degrees WNW	Spacing 2 to 3 m
	B) Strike	110 degrees	Dip 75 degrees SW	Spacing 0.2 to 2 m
Sheeting	C) Strike	Horizontal	Dip 0 degrees	Spacing 1 to 2 m avg.
	D) Strike		Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Minor quartz veins and pods.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, well-foliated, red granite. Zones of shearing were also observed in this area. Vertical and horizontal joint sets repeat in a regular nature with a relatively close spacing. This factor, coupled with the presence of quartz veins and pods, limits the building stone potential of this area.

***Photo B6.** Extensive horizontal, closely spaced, joint sets in a light pink granite. 86-OLD-004*

BEAVER CREEK COMPLEX

LOCATION North-central Tudor Township, approximately 2 miles west of Gilmour

NTS 31 C/13 OGS Map 2168 Geological Report 67

SAMPLE SITES 86-TUD-003, 86-TUD-004, 86-TUD-005, 86-TUD-006, 86-TUD-007, 86-TUD-008

DESCRIPTION OF AREA

The Beaver Creek complex consists of variable lithologies. Lumbers (1969) mapped this intrusion as a fine-grained to medium-grained, sometimes amphibole-rich, albite granite and syenite. He also described breccias consisting of fine-grained albite granite and syenite fragments in a matrix ranging from marble (from metasedimentary inclusions) to a chloritic matrix to an amphibole-rich granite and syenite matrix. Mafic intrusive rocks (called diorite, probably equivalent to Lumber's amphibole-rich albite granite and syenite) and felsic intrusive rocks (primarily K-spar-quartz rocks) named granite or syenite based on the amount of quartz perceived were observed in the field. Also noted were breccias composed of felsic intrusive fragments hosted by sheared, sometimes vuggy and schistose, mafic intrusive or carbonate metasedimentary inclusions. Hybrids of the above lithologies could also occur.

The area examined was primarily in the southern half of the intrusion. A number of small plugs exist between the Beaver Creek complex and the Wadsworth trondjemite north of Gilmour. These consist primarily of albite granite (Lumbers 1969); the three largest can all be approached easily from present roads. Mapping by Lumbers (1969) indicated good exposure (consistent with topographic highs), but variable lithology.

CONCLUSIONS

Work to date indicates that exposure is very poor and lithologies are extremely variable over small distances (100 m) and often unsuitable for building stone purposes (sheared, schistose and brecciated).

In conclusion, further work is not recommended. Building stone potential appears to be low. Uses of Beaver Creek lithologies are restricted, for the most part, to rubble.

POTENTIAL

POOR	MODERATE	GOOD
86-TUD-003		
86-TUD-004		
86-TUD-005		
86-TUD-006		
86-TUD-007		
86-TUD-008		

REFERENCE

Lumbers, S.B. 1969. Geology of Limerick and Tudor townships, Hastings County, Ontario; Ontario Department of Mines, Geological Report 67, 110p.

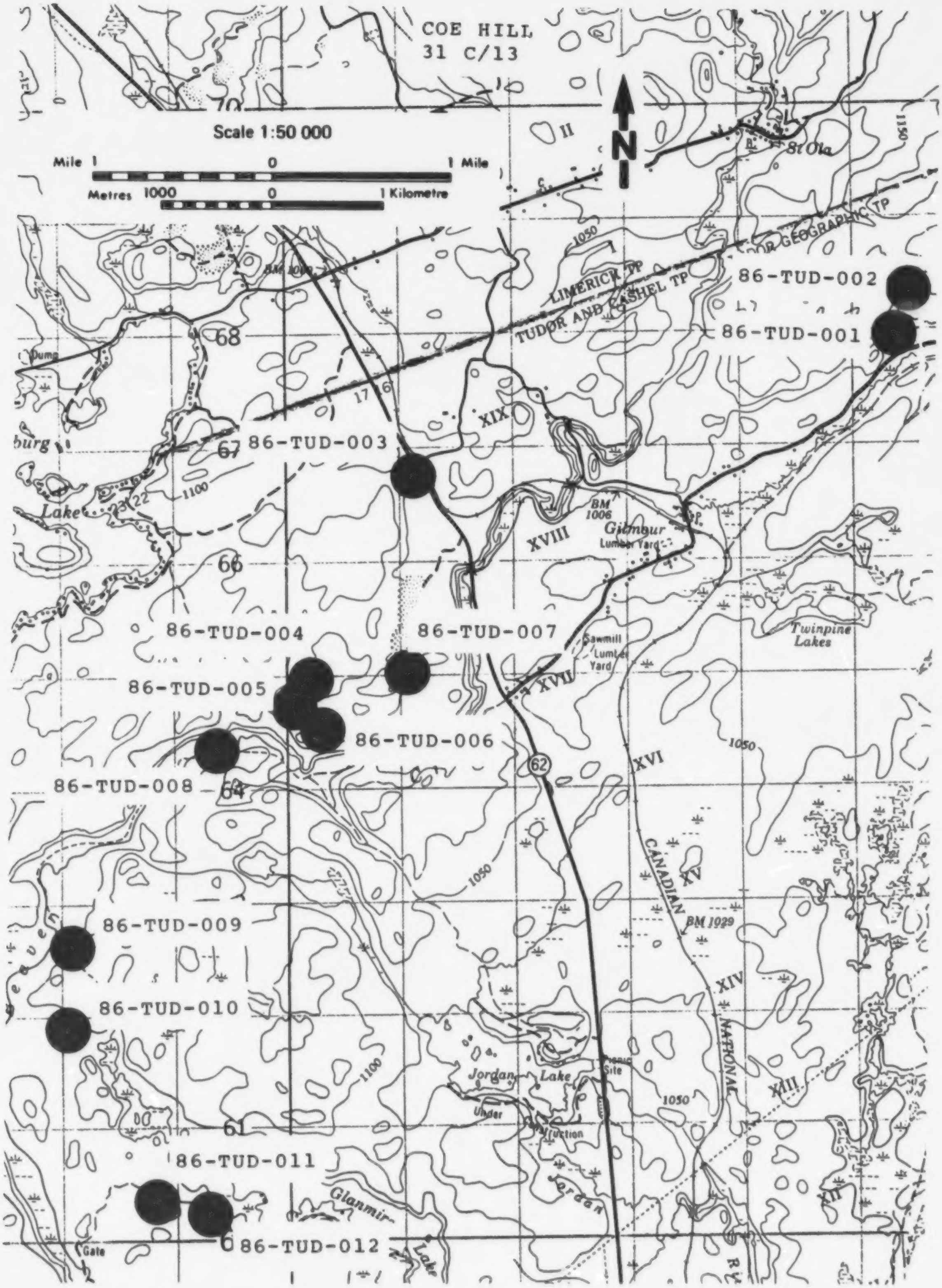
COE HILL
31 C/13
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N
St Ola
LIMERICK TP
TUDOR AND CASHEL TP
GEOGRAPHIC TP
86-TUD-001
86-TUD-002
86-TUD-003
86-TUD-004
86-TUD-005
86-TUD-006
86-TUD-007
86-TUD-008
86-TUD-009
86-TUD-010
86-TUD-011
86-TUD-012
Gilmour
Lumber Yard
Sawmill
Lumber Yard
Twinpine Lakes
CANADIAN NATIONAL RY
Jordan Lake
Glanmire Lake
Beaver
62
XIX
XVIII
XVII
XVI
XV
XIV
XIII
XII
II
68
67
66
64
61
BM 1006
BM 1029
1050
1100

Figure B4. Sample locations, Beaver Creek complex.

86-TUD-003

PROPERTY NO. 86-TUD-003 PLUTON NAME Beaver Creek Complex

PROPERTY NAME Hwy. 62 - Beaver Creek (Phillips Road) COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite Granite

TOWNSHIP Tudor LOT 16 CONC. 19

NTS 31 C/13 UTM CO-ORDINATES Easting 291200 Northing 4966800

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4458-190-210

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish grey (to light green where brecciated)
Weathered Surface Grey
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing (X) Intensive Jointing X

A) Strike 150 degrees	Dip vertical	Spacing 0.2 to 1 m
B) Strike subhorizontal	Dip	Spacing 0.5 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite, mafics approx. 25%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare occassional biotite slip planes; rare felsic stringers (<1 cm wide), feldspar alteration, brecciation.

POSSIBLE USES Ashlar, paving stone, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Rock is locally brecciated resulting in unaltered felsic fragments hosted by an amphibole-chlorite-rich matrix. This brecciation and intense jointing limit the building stone potential of this site.

86-TUD-004

PROPERTY NO. 86-TUD-004 PLUTON NAME Beaver Creek Complex

PROPERTY NAME Beaver Creek 1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Diorite-Gabbro

TOWNSHIP Tudor LOT 21 CONC. 17

NTS 31 C/13 UTM CO-ORDINATES Easting 290150 Northing 4964900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4456-165-35

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Green-black
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Fine (-medium) Uniform Variable X

TEXTURE Massive (to foliated) Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike horizontal Dip 0 degrees Spacing 0.5 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, amphibole; Mafic content: approx. 50%

DELETERIOUS MINERALS Yes X No Type Sulphides Percent 1%

OTHER FEATURES Variable amounts of amphibole; sulphide weathering.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good FairD Poor X

COMMENTS This rock is a massive, medium-grained, green to black diorite (Gabbro). Deleterious features in this rock include moderate to intense irregular jointing and the presence of sulphides.

86-TUD-005

PROPERTY NO. 86-TUD-005 PLUTON NAME Beaver Creek Complex

PROPERTY NAME Beaver Creek-2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Tudor LOT 21 CONC. 17

NTS 31 C/13 UTM CO-ORDINATES Easting 290200 Northing 4964700

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4456-165-35

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Bleached white
Uniform X Variable

WEATHERING DEPTH ≤0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 040 degrees Dip 85 degrees S Spacing 0.2 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, minor quartz, chlorite; Mafics: <0.5%

DELETERIOUS MINERALS Yes X No Type Pyrite (chlorite) Percent ≤1%

OTHER FEATURES Chlorite-coated joints; rusty vugs (1 to 2 cm long); rare quartz veins; pyrite is sparsely disseminated, largest observed concentration was 1 mm diameter.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS The building stone potential of this site is difficult to assess due to poor outcrop exposure. The rock is a medium-grained, massive, pink syenite (with <5% fine-grained biotite). Jointing is irregular and intense. The presence of quartz veins and sulphides further limits the building stone potential of this site.

86-TUD-006

PROPERTY NO. 86-TUD-006 PLUTON NAME Beaver Creek Complex

PROPERTY NAME Beaver Creek-3 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Intrusive Breccia

TOWNSHIP Tudor LOT 21 CONC. 17

NTS 31 C/13 UTM CO-ORDINATES Easting 290300 Northing 4964550

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4456-165-35

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark green (matrix) to pink breccia fragments
Weathered Surface Bleached grey-green (matrix) to white (fragments)
Uniform Variable X

WEATHERING DEPTH ≤0.5 cm

GRAIN SIZE Fine-medium (matrix) to fine (fragments) Uniform Variable X

TEXTURE Foliated (matrix) to massive (fragments) Uniform Variable X

FABRIC Yes X No. Weak X Mod. Strong X Strike 075 degrees (variable) Dip 85 degrees N
Formed By Shearing

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Matrix - Feldspar (mostly plagioclase) and amphibole with abundant chlorite developed where shearing is most intense. Breccia fragments - K-spar, quartz, rare biotite?

DELETERIOUS MINERALS Yes X No Type Chlorite Percent can be 20 to 30%

OTHER FEATURES Breaks easily due to sheared, often vuggy, character. Difficult to obtain fresh surface, always breaks along rusty coated fractures.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Exposure is along steep south-facing slope north of access road. Breccia is formed by felsic intrusive fragments (albite syenite according to Lumbers 1969) hosted by a melanocratic, amphibole and chlorite-rich matrix sheared diorite? (amphibole-rich albite syenite according to Lumbers 1969). Felsic fragments can vary considerably in size from centimetres to metres. Breccia is not consistently developed throughout area, local areas are more intensely brecciated and vuggy. Building stone potential is low.

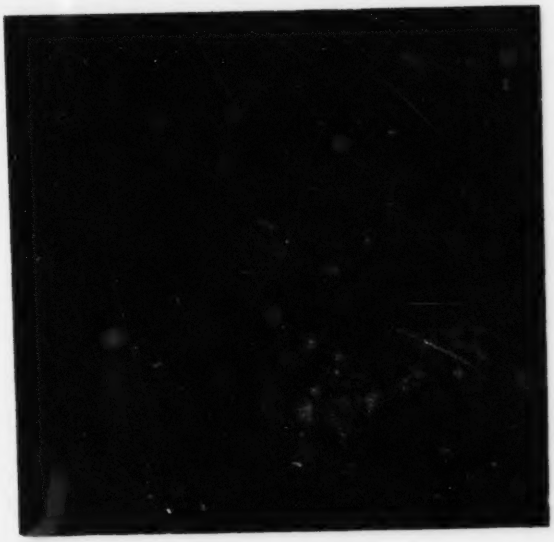

Photo B7. *Felsic intrusive breccia fragments hosted by sheared mafic intrusive rock in a shear zone. 86-TUD-006*

86-TUD-007

PROPERTY NO. 86-TUD-007 PLUTON NAME Beaver Creek Complex

PROPERTY NAME Beaver Creek-04 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Felsic Intrusive

TOWNSHIP Tudor LOT 18 CONC. 17

NTS 31 C/13 UTM CO-ORDINATES Easting 291100 Northing 4965000

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4456-165-35

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Bleached pinkish white
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Fine Uniform X Variable

TEXTURE Massive-granular Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong Strike 055 degrees
Dip 85 degrees S
Formed By Sheared, brecciated marble inclusions

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 020 degrees Dip 55 degrees W Spacing 0.2 m
B) Strike 020 degrees Dip 45 degrees E Spacing 0.2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz; Mafics: $\leq$5% local Fe carbonate

DELETERIOUS MINERALS Yes X No Type Fe carbonate Percent $\leq$1%

OTHER FEATURES Muscovite-coated joints; large (10s of metres in width), sheared, metasedimentary carbonate inclusions nearby.

POSSIBLE USES Limited as building stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS Intense jointing, brecciation and shearing of the rocks at this site restrict quarry block extraction.

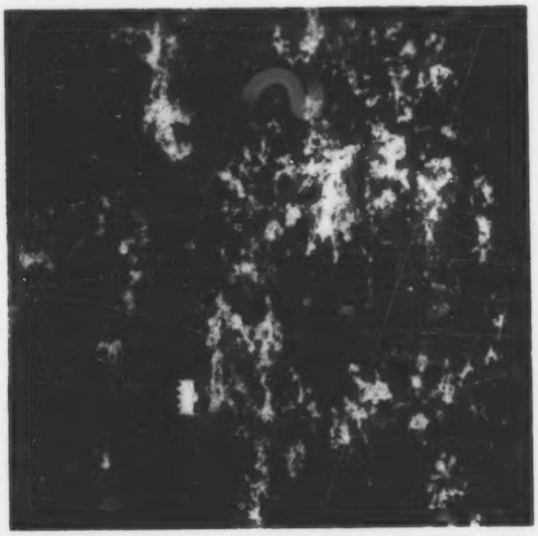

Photo B8. *Shear zone—felsic intrusive breccia clasts hosted by sheared, contaminated marble. 86-TUD-007*

86-TUD-008

PROPERTY NO. 86-TUD-008 PLUTON NAME Beaver Creek Complex

PROPERTY NAME Beaver Creek-5 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Felsic Intrusive

TOWNSHIP Tudor LOT 22 CONC. 17

NTS 31 C/13 UTM CO-ORDINATES Easting 289350 Northing 4964350

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4456-165-35

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface White to pink
Weathered Surface Buff grey
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Fine Uniform Variable X

TEXTURE Massive to foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. Strong X Strike 105 degrees
Dip 60 degrees S
Formed By (Mineral alignment quartz-feldspar)

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz; Mafics: <2%

DELETERIOUS MINERALS Yes X No Type Sulphides Percent 1 to 2%

OTHER FEATURES Occasional quartz veins; millimetre-scale Fe carbonate rusty vugs, local shearing; significant variation in local lithologies; some carbonate-coated fractures.

POSSIBLE USES Limited

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS Quartz veins, carbonate-filled fractures, and local shearing are common at this site. The intense irregular jointing further limits the building stone potential.

BISHOP CORNERS FORMATION

LOCATION A continuous metasedimentary formation extending from southern Barrie Township, through the western part of Kaladar Township into southeastern Elzevir Township

NTS 31 C/14 OGS Maps 2432, 2053 Report 215

SAMPLE SITE 86-KAL-009

DESCRIPTION OF AREA

The rock sampled is a quartz-pebble conglomerate of the Bishop Corners Formation, a sequence of clastic, silicious metasediments representing the basal unit of the Flinton Group metasediments. The clasts are pebble-size and deformed to flattened, ellipsoidal shapes. Most are grey to white quartzite. The matrix is fine to medium grained, varying from quartzofeldspathic to micaceous in composition. The matrix is generally schistose with a shiny white to grey colour. Intensity of joint patterns and foliation may be variable throughout the strike length of the formation. However, in the area sampled, the joint pattern is regular and moderate.

CONCLUSIONS

The potential for the removal of small quarry blocks combined with the unique appearance of this rock suggest that further investigation of the area is warranted.

POTENTIAL

POOR	MODERATE	GOOD
	86-KAL-009	

REFERENCE

Wolff, J.M. 1982. Geology of the Kaladar area, Frontenac, and Lennox and Addington counties; Ontario Geological Survey, Report 215, 94p.

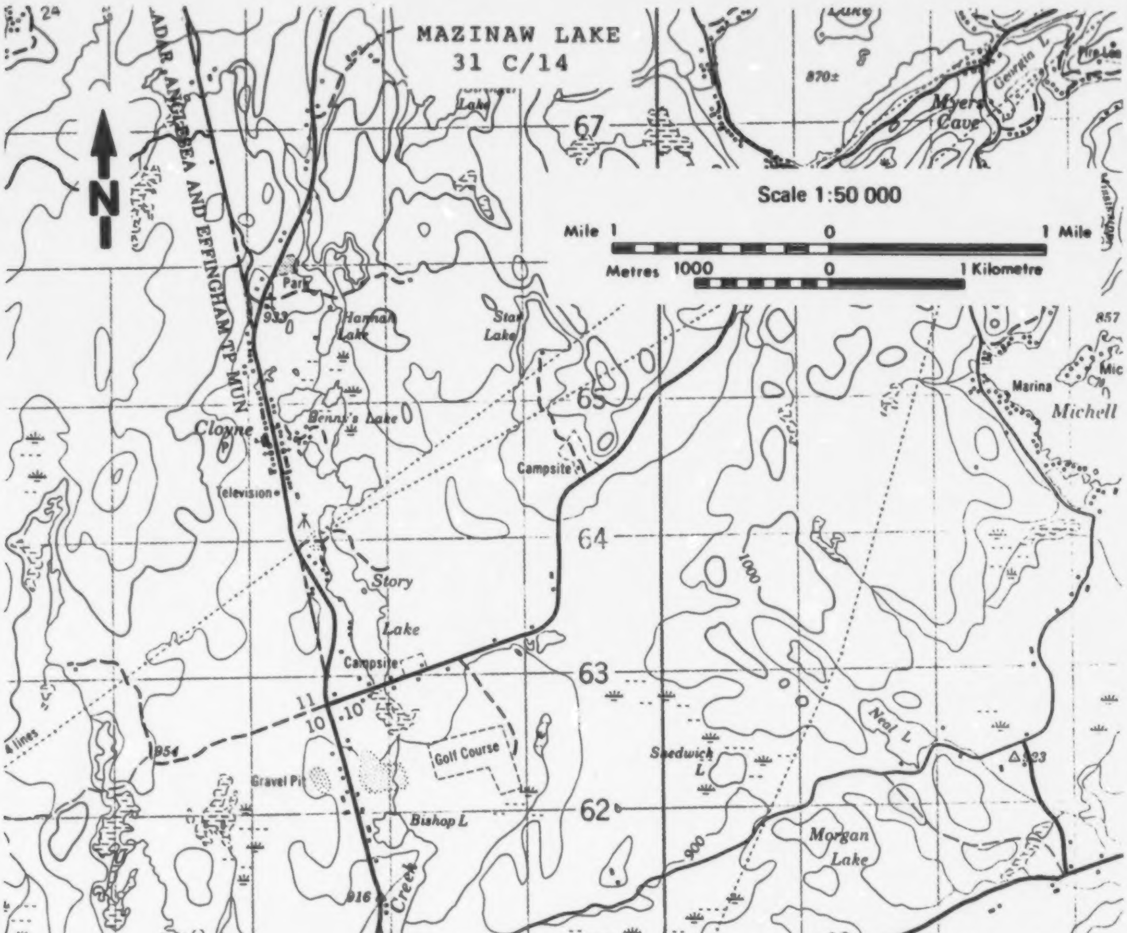
MAZINAW LAKE
31 C/14
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
KALADAR ANGLESEA AND EFFINGHAM TP MUN
Cloyne
Hannah Lake
Star Lake
Benn's Lake
Story Lake
Campsite
Golf Course
Gravel Pit
Bishop L
Creek
Bishop Corners
Little Bishop L
Abandoned
Sedwick L
Morgan Lake
Neal L
Myers Cave
Michell
Marina
Beaver
ANGLESEA GEOGRAPHIC TOWNSHIP
KALADAR GEO TP
LENNOX AND ADDINGTON CO
FRONTENAC CO
Reid Lakes
86-KAL-009
67
65
64
63
62
61
60
58
26
27
28
10'
29
30
31
Beaver 2 km

Figure B5. Sample location, Bishop Corners Formation.

86-KAL-009

PROPERTY NO. 86-KAL-009 **PLUTON NAME** Bishop Corners Formation

PROPERTY NAME Bishop Corners **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Schistose Conglomerate

TOWNSHIP Kaladar **LOT** 30 **CONC.** 7, 8

NTS 31 C/14 **UTM CO-ORDINATES** Easting 328200 Northing 4957500

PROPERTY STATUS Roadcut **AIR PHOTO NO.** 78-4452-192-1451

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High velocity

COLOUR Fresh Surface Silver-grey-white
Weathered Surface Silver grey
Uniform Variable X

WEATHERING DEPTH Negligible

GRAIN SIZE Large pebbles in fine-grained groundmass Uniform Variable X

TEXTURE Lineated and foliated Uniform Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Lineation and foliation

BEDDING Yes X No Strike 185 degrees Dip 70 degrees SE Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing

A) Strike	185 degrees Dip	70 degrees Spacing	1 m
B) Strike	115 degrees Dip	80 degrees Spacing	1 m
C) Strike	Dip	Spacing	
D) Strike	Dip	Spacing	

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Quartz pebbles, mica

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES

POSSIBLE USES Architectural stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This conglomerate shows a definite lineation of quartz pebbles in a fine-grained mica groundmass. The mica is foliated and flows around the quartz pebbles giving the rock a very unique boundinage appearance. The jointing appears to be fairly regular and moderate and might facilitate the removal of blocks of 1 m^3 size. Due to blasting along the road, this is difficult to determine for certain. The uniqueness of this stone may encourage further investigation.

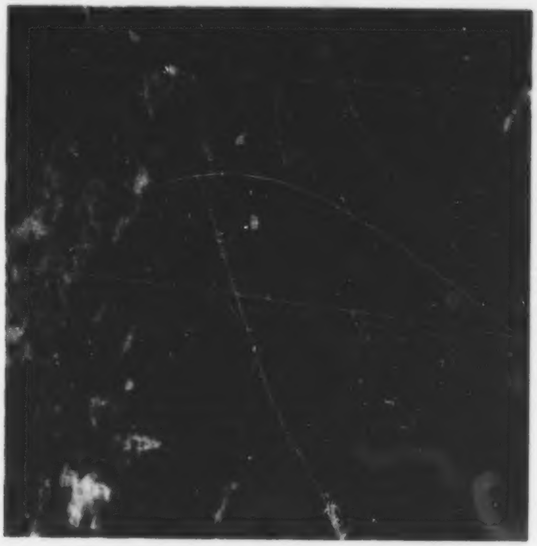

Photo B9. Textural view of quartz-pebble conglomerate. 86-KAL-009

COE HILL GRANITE

LOCATION Wollaston Township, south of Highway 620, west and southwest of Wollaston Lake-Coe Hill

NTS 31 C/13 OGS Map 2020 Geological Report 11

SAMPLE SITES 86-WOL-006, 86-WOL-007, 86-WOL-008, 86-WOL-009, 86-WOL-010

DESCRIPTION OF AREA

Rock samples taken in the Coe Hill Granite are biotite granites in the northern part of the pluton and pink granites to the south. The only notable exception is a diorite sample taken from an inactive quarry in Lot 24, Concession 5. These rocks tend to be medium grained and massive except around the borders of the pluton where slight foliation was noticed. The colour of the rock tends to be quite uniform near the centre of the pluton but near the edges there is a slight variation due to a gneissic foliation.

Jointing in the pluton varies between regular and irregular and is generally moderate with some areas of intense jointing. In areas where horizontal jointing can be seen, it tends to have a spacing of less than half a metre.

Perhaps the most deleterious feature of the pluton as far as building stone is concerned is the presence of quartz veins, pods and stringers throughout much of the area. These quartz features are a limiting factor at the granite quarry (86-WOL-007) that was visited.

The mineralogy of the pluton appears to be mainly quartz, potassium feldspar, plagioclase and biotite.

The southern part of the pluton is characterized by many pegmatite dikes and mafic inclusions which seriously detract from the potential of the area.

CONCLUSIONS

Although this area has been quarried for building stone in the past, it is doubtful that this area has much economic potential at the present time for the removal of large building stone blocks. Some areas may be viable for small-scale operations.

POTENTIAL

POOR	MODERATE	GOOD
86-WOL-006	86-WOL-007	
86-WOL-009	86-WOL-008	
	86-WOL-010	

REFERENCES

Carmichael, D.M. 1970. Intersecting isograds in the Whetstone Lake area, Ontario; Journal of Petrology, v.11, pt.1, p.147-181.

Davidson, A., Britton, J.M., Bell, D. and Blenkinsop, J. 1979. Regional synthesis of the Grenville Province of Ontario and western Quebec; in Current Research, Part B, Geological Survey of Canada, Paper 79-1B, p.153-262.

Hewitt, D.F. 1962a. Geology of Wollaston Township, Hastings County, Ontario; Ontario Department of Mines, Geological Report 11, p.29-55.

---1962b. Some tectonic features of the Grenville Province of Ontario; Transactions of the Royal Society of Canada, Special Publication 4, p.102.

---1964. Building stones of Ontario part V granite and gneiss; Ontario Department of Mines, Industrial Mineral Report 19, 51p.

Hewitt, D.F. and Satterly, J. 1957. Haliburton-Bancroft area, Province of Ontario; Ontario Department of Mines, Map 1957B, scale 1:126 720.

Laakso, R.K. 1968. Geology of Lake Township, Hastings County, Ontario; Ontario Department of Mines, Geological Report 54, 36p.

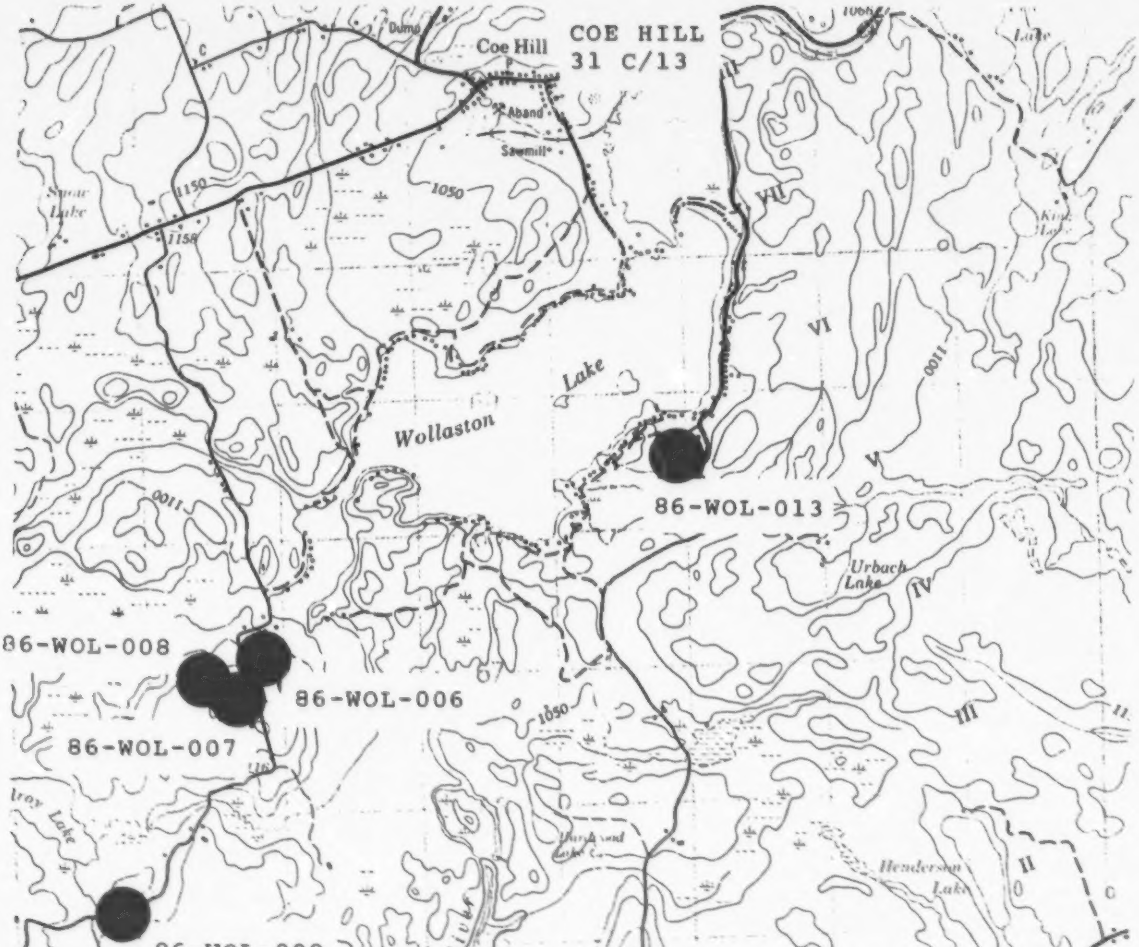
COE HILL
31 C/13
Coe Hill
Aband
Sawmill
Wollaston
Lake
86-WOL-013
86-WOL-008
86-WOL-006
86-WOL-007
86-WOL-009
86-WOL-012
86-WOL-010
Urbach Lake
Henderson Lake
Castoroil Lake
Deer River
The Ridge
Creek
WOLLASTON TP
MARMORA AND LAKE TP
LAKE GEOGRAPHIC TP
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N

Figure B6. Sample locations, Coe Hill granite.

86-WOL-006

PROPERTY NO. 86-WOL-006 PLUTON NAME Coe Hill Granite

PROPERTY NAME Wollaston Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granite

TOWNSHIP Wollaston LOT 22 CONC. 5

NTS 31 C/13 UTM CO-ORDINATES Easting 373800 Northing 4967100

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4434-9-179

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Grey-black
Uniform X Variable

WEATHERING DEPTH 1 mm

GRAIN SIZE Medium-fine Uniform Variable X

TEXTURE Foliated to gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 160 degrees Dip
Formed By Alignment of biotite grains

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 110 degrees Dip Vertical Spacing 3 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar quartz biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This site consists of small outcrop exposures of strongly foliated biotite granite. Jointing is moderate in both regular and irregular joint sets. Quartz veins (approximately 2 cm in width) were observed but are not abundant. One regular joint set has a strike of 110 degrees and a vertical dip with spacing of approximately 3 cm. Potential for building stone development in this area is limited.

86-WOL-007

PROPERTY NO. 86-WOL-007 **PLUTON NAME** Coe Hill Granite

PROPERTY NAME Granite Quarry **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Wollaston **LOT** 24 **CONC.** 5

NTS 31 C/13 **UTM CO-ORDINATES** Easting 373600 Northing 4966850

PROPERTY STATUS Inactive **AIR PHOTO NO.** 77-4434-9-179

PRODUCTION HISTORY Former granite quarry

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface Pinkish white
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH Regular

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 143 degrees Dip Vertical Spacing 3 m
B) Strike 80 degrees Dip Vertical Spacing 3 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, biotite, quartz; Mafic content: approx. 20%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Outcrop area displays many felsic stringers which detract from the appearance of the outcrop.

POSSIBLE USES Curbing stone, architectural stone, landscaping stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This area contains medium-grained, massive, pinkish-brown granite. The granite was quarried for building stone material in the past. Quarry was abandoned presumably because of the large number of quartz stringers in the rock.

Photo B10. Overall view of quarry exhibiting two benches and pinkish-white colour of the granite. 86-WOL-007

Photo B11. Part of grout pile at the quarry site. 86-WOL-007

86-WOL-008

PROPERTY NO. 86-WOL-008 PLUTON NAME Coe Hill Granite

PROPERTY NAME Diorite Quarry COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Diorite-Gabbro

TOWNSHIP Wollaston LOT 24 CONC. 5

NTS 31 C/13 UTM CO-ORDINATES Easting 373450 Northing 4566950

PROPERTY STATUS Inactive AIR PHOTO NO. 77-4434-9-179

PRODUCTION HISTORY Area was quarried for diorite, probably ashlar or small building stone. No further information available at this time.

USE OF EXPLOSIVES Yes X No Type Black powder

COLOUR Fresh Surface Black
Weathered Surface Brownish black
Uniform X Variable

WEATHERING DEPTH 1 to 5 mm

GRAIN SIZE Fine Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair to poor

MINERALOGY Feldspar; Mafic content: approx. 50%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Granitic stringers, horizontal sheeting (approximately 0.5 m spacing).

POSSIBLE USES Ashlar, monument stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This sample is a massive, medium-grained, black gabbro or diorite with rare medium-grained plagioclase phenocrysts. Felsic stringers were observed but were not abundant. Jointing occurs in moderately intensive, irregular patterns.

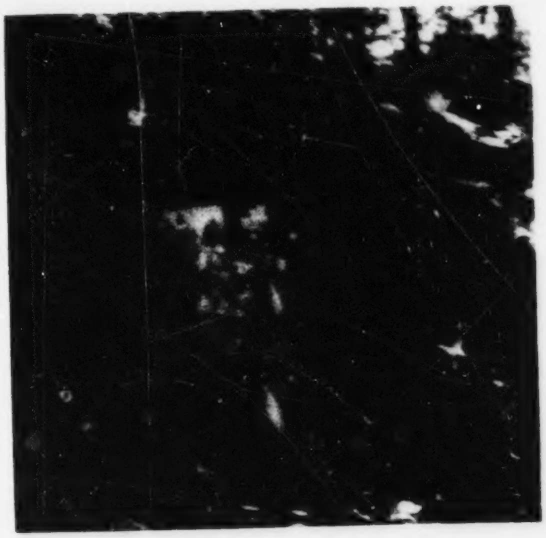

Photo B12. Horizontal jointing limits potential block size. 86-WOL-008

CENTIMETRE
INCH

Photo B13. Diorite contact with pegmatite. 86-WOL-008

86-WOL-009

PROPERTY NO. 86-WOL-009 PLUTON NAME Coe Hill Granite

PROPERTY NAME Gilroy Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Wollaston LOT 26, 27 CONC. 4

NTS 31 C/13 UTM CO-ORDINATES Easting 372800 Northing 4965300

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Fine Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 150 degrees Dip 90 degrees Spacing ≤1 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes X No Type Bio schist inclusion Percent

OTHER FEATURES Quartz stringers, pegmatite dike (5 cm), many mafic inclusions.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a fine-grained, massive granite. Deleterious features include a quartz stringer and a pegmatite dike which measures about 5 cm wide. The jointing follows regular and irregular patterns with moderate spacing, however, more exposure is needed to determine the true extent of the jointing. Horizontal jointing was not observed. Numerous mafic inclusions were visible on the surface of the outcrop. These factors limit the building stone potential of this area.

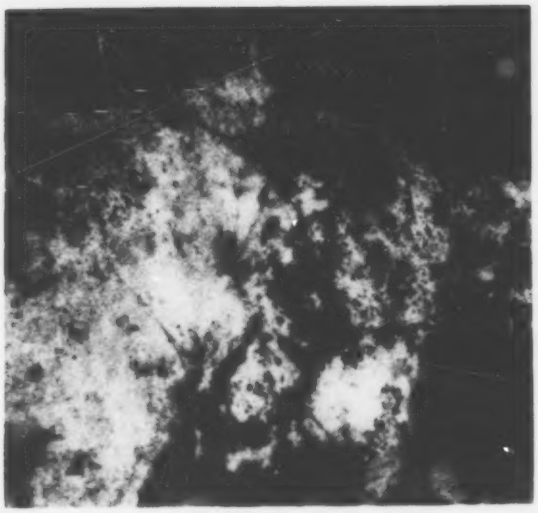

Photo B14. Mafic inclusions found in outcrop. 86-WOL-009

86-WOL-010

PROPERTY NO. 86-WOL-010

PLUTON NAME Coe Hill Granite

PROPERTY NAME SW Corner of Wollaston Township

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Wollaston

LOT 29, 30 CONC. 1

NTS 31 C/13 UTM CO-ORDINATES Easting 372600 Northing 4961900

PROPERTY STATUS Prospect

AIR PHOTO NO. 77-4433-15-201

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink with black
Weathered Surface Grey-pink
Uniform X Variable

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Slight foliation Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike Dip
Formed By Alignment of biotite grains (slight foliation)

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 100 degrees Dip Spacing 3 m
B) Strike 40 degrees Dip Spacing 2 m
C) Strike Horizontal Dip Spacing <0.5 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz biotite; Mafic content: approx. 25 to 30%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Pegmatite dikes, quartz veins, horizontal jointing spaced at less than 0.5 m, minor exfoliation, aplite dikes observed but rare.

POSSIBLE USES Ashlar, curbing stone, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This area contains a medium-grained, pink granite which has a relatively high biotite content, a fact which may hamper its polishing potential. Jointing occurs in both regular and irregular joint sets with prodominantly moderate intensity. There are numerous pegmatite dikes in the area as well as Some aplite dikes and quartz veins. These factors limit the building stone potential of the area.

CORDOVA PLUTON

LOCATION Marmora Township, north of Crowe Lake, east of the Hastings-Peterborough County border; between Cordova Mines and Fidlar Rapids of Beaver Creek

NTS 31 C/5, 12 OGS Map P.2613 OFR 5537

SAMPLE SITES 86-MAR-001, 86-MAR-002, 86-MAR-003, 86-MAR-004, 86-MAR-014, 86-MAR-015

DESCRIPTION OF AREA

The rock type in all six sample areas is gabbroic. All sites show intense jointing, variable grain size, and grey-green to black colour. Deleterious features in addition to jointing include hematite coating, pyrite, granitic stringers, quartz pods and sheeting.

CONCLUSIONS

The Cordova pluton has little potential as a source of building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-MAR-001		
86-MAR-002		
86-MAR-003		
86-MAR-004		
86-MAR-014		
86-MAR-015		

REFERENCE

Bartlett, J.R. and Moore, J.M. Jr. 1985. Geology of Belmont, Marmora, and Southern Methuen townships, Peterborough and Hastings counties; Ontario Geological Survey, Open File Report 5537, 236p.

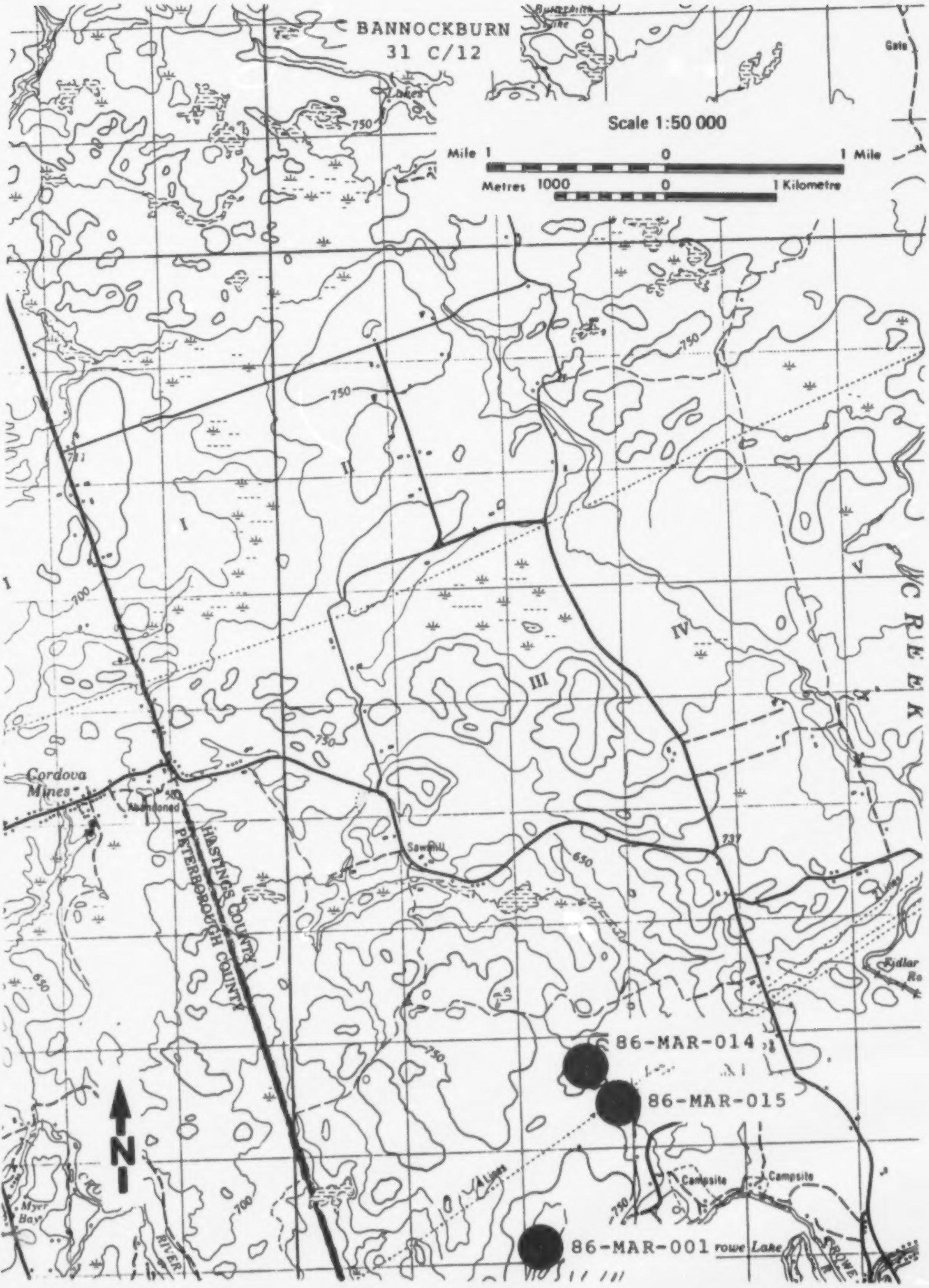
BANNOCKBURN
31 C/12
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Cordova Mines
Abandoned
Sawmill
HASTINGS COUNTY
PETERBOROUGH COUNTY
86-MAR-014
86-MAR-015
86-MAR-001
Campsite
Campsite
N
I
II
III
IV
V
CREEK
750
700
650
737
711
Gate
Myer Bay
RIVER

Figure B7. Sample locations, Cordova pluton (sheet 1).

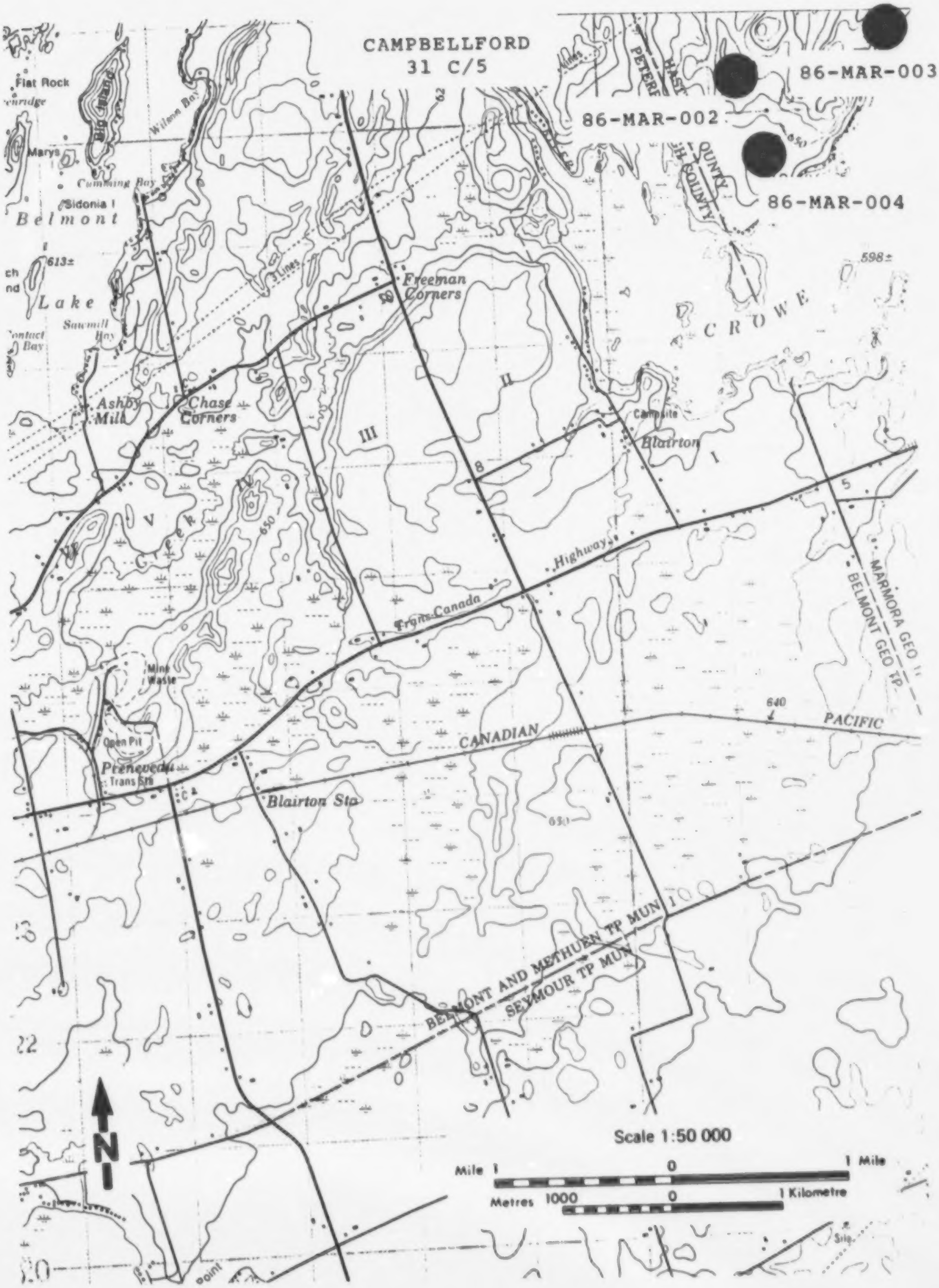
CAMPBELLFORD
31 C/5
86-MAR-002
86-MAR-003
86-MAR-004
Flat Rock
Big Island
Marys
Cumming Bay
Sidonia I
Belmont
Lake
613±
Sawmill Bay
Contact Bay
Ashby Mill
Chase Corners
Freeman Corners
CROWE
598±
Campsite
Blairton
I
II
III
IV
V
VI
Creek
650
Trans-Canada Highway
Mine Waste
Open Pit
Preneveau
Trans Sta
Blairton Sta
CANADIAN PACIFIC
640
MARMORA GEO TP
BELMONT GEO TP
BELMONT AND METHUEN TP MUN
SEYMOUR TP MUN
N
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre

Figure B8. Sample locations, Cordova pluton (sheet 2).

86-MAR-001

PROPERTY NO. 86-MAR-001 PLUTON NAME Cordova Pluton

PROPERTY NAME Crowe Lake I COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Marmora LOT 12 CONC. 2

NTS 31 C/12 UTM CO-ORDINATES Easting 382100 Northing 4931100

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435 136-106

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark green
Weathered Surface Grey/black
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 160 degrees Dip 40 degrees E Spacing 1 to 3 m
B) Strike 115 degrees Dip vertical Spacing 2 to 3 m
C) Strike 85 degrees Dip vertical Spacing 0.2 to 0.7 m
D) Strike horizontal Dip 0 degrees Spacing 0.1 to 1 m

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Pyroxene, feldspar, (chlorite) magnetite

DELETERIOUS MINERALS Yes X No Type Pyrite Percent 1%

OTHER FEATURES Hematite staining/grain size of pyroxene 0.5 to 10 cm/sheeting, magnetite and pyrite are present.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This area is mineralogically heterogeneous with mafic to more felsic phases present. The pyroxene is partially altered to chlorite and the rock contains up to 2% sulphides. Jointing for the most part is intense.

86-MAR-002

PROPERTY NO. 86-MAR-002 PLUTON NAME Cordova Pluton

PROPERTY NAME Crowe Lake II COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Marmora LOT 11 CONC. 1

NTS 31 C/5 UTM CO-ORDINATES Easting 381300 Northing 4930400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435-136-106

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Greenish grey
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 2 to 3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Pyroxene, feldspar, ± carbonate, ± chlorite, locally altered to a calc-silicate

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Felsic stringers, 1 m horizontal sheeting.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Quarry block extraction is limited by intense jointing.

86-MAR-003

PROPERTY NO. 86-MAR-003 **PLUTON NAME** Cordova Pluton

PROPERTY NAME Crowe Hill Estates **COMMERCIAL STONE NAME** Black Granite

GEOLOGICAL ROCK NAME Pyroxenite

TOWNSHIP Marmora Lot 11 **CONC.** 2

NTS 31 C/5 **UTM CO-ORDINATES** Easting 382500 Northing 4930700

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4435-136-106

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Green/grey
Weathered Surface Grey/black
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Fine-(medium)-coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 160 degrees Dip Spacing 0.1 to 1 m
B) Strike 70 degrees Dip Spacing 0.1 to 1 m
C) Strike horizontal Dip 0 degrees Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Pyroxene, feldspar, chlorite

DELETERIOUS MINERALS Yes X No Type Sulphide Percent Trace

OTHER FEATURES Grain size is very variable, rusting on some surfaces sheeting.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS There is intense jointing in both regular and irregular joint set patterns. Variable grain size is also present at this site.

86-MAR-004

PROPERTY NO. 86-MAR-004 PLUTON NAME Cordova Pluton

PROPERTY NAME Easton (mailbox) COMMERCIAL STONE NAME Black granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Marmora LOT 10 CONC. 1

NTS 31 C/5 UTM CO-ORDINATES Easting 381500 Northing 4929700

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435-136-106

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type For roadwork

COLOUR Fresh Surface Dark green
Weathered Surface Grey-green
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium to coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 120 degrees Dip vertical Spacing 0.5 to 1 m
B) Strike 20 degrees Dip vertical Spacing 2 m
C) Strike 185 degrees Dip 40 degrees E Spacing 0.5 to 1 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Pyroxene, feldspar

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Sulphides produce 1 cm rusty spots.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This is a medium- to coarse-grained, dark green gabbro. Intense irregular jointing restricts potential quarry block size.

Photo B15. Intense;, irregular jointing. 86-MAR-004

86-MAR-014

PROPERTY NO. 86-MAR-014

PLUTON NAME Cordova Pluton

PROPERTY NAME Boundary Road

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Marmora

LOT 14 CONC. 2

NTS 31 C/12 UTM CO-ORDINATES Easting 380600 Northing 4932650

PROPERTY STATUS Prospect

AIR PHOTO NO. 78-4436-127-134

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Green-grey
Weathered Surface Light grey
Uniform Variable X

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Amphibole, feldspar (quartz)

DELETERIOUS MINERALS Yes X No Type Hematite, sulphides Percent <3

OTHER FEATURES Hornblende phenocrysts, hematite staining and coating.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a medium-grained, grey-green gabbro. The grain size is variable and amphibole phenocrysts are present. Sulphide inclusions and hematite staining were also observed. Jointing occurs in an intense irregular nature. These factors diminish the building stone potential of this area.

86-MAR-015

PROPERTY NO. 86-MAR-015
PLUTON NAME Cordova Pluton
PROPERTY NAME Hydroline
COMMERCIAL STONE NAME Black Granite
GEOLOGICAL ROCK NAME Pyroxenite
TOWNSHIP Marmora
LOT 12, 13 CONC. 2
NTS 31 C/12 UTM CO-ORDINATES Easting 382820 Northing 4932450
PROPERTY STATUS Prospect
AIR PHOTO NO. 78-4436-127-137
PRODUCTION HISTORY Nil
USE OF EXPLOSIVES Yes No X Type
COLOUR Fresh Surface Green-black
Weathered Surface Dark grey-green-white
Uniform X Variable
WEATHERING DEPTH 1 mm
GRAIN SIZE Coarse Uniform Variable X
TEXTURE Massive Uniform X Variable
FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By
BEDDING Yes No X Strike Dip Avg. Thickness
JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing
POTENTIAL FOR QUARRY BLOCKS Poor
MINERALOGY Pyroxene, feldspar (chlorite)
DELETERIOUS MINERALS Yes X No Type Hematite Percent ≤55%
OTHER FEATURES Aplite dike in quartz pods, felsic stringers, felsic phases.
POSSIBLE USES Ashlar, crushed stone
OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a coarse-grained, chloritized pyroxenite. It contains numerous felsic stringers and pods and is intensely jointed in both regular and irregular joint patterns. The grain size is variable on an outcrop scale. These factors reduce the building stone potential of this rock.

Photo B16. Part of the outcrop showing intense jointing and sheeting; field of view is approximately 10 m. 86-MAR-015

CROW LAKE PLUTON

LOCATION West-central South Crosby Township, extending into eastern Storrington Township, from south of Crow Lake to Sand Lake

NTS 31 C/9 OGS Map P.2611 GSC Bulletin 199

SAMPLE SITE 86-SCRO-001

DESCRIPTION OF AREA
The Crow Lake pluton consists of two northeast-trending bodies with foliations conformable to the surrounding gneisses. The central parts are composed of pyroxene monzonite grading to hornblende-biotite granite at the margins. Magnetite, ilmenite, specular hematite and pyrite occur throughout the monzonite (Currie and Ermanovics 1971).

Outcrops at sample site 86-SCRO-001 show irregular, intense jointing as well as hematite staining and trace pyrite.

POTENTIAL

POOR	MODERATE	GOOD
86-SCRO-001		

REFERENCE

Currie, K.L. and Ermanovics, I.F. 1971. Geology of the Loughborough Lake region, Ontario, with special emphasis on the origin of the granitoid rocks--A contribution to the syenite problem; Geological Survey of Canada, Bulletin 199.

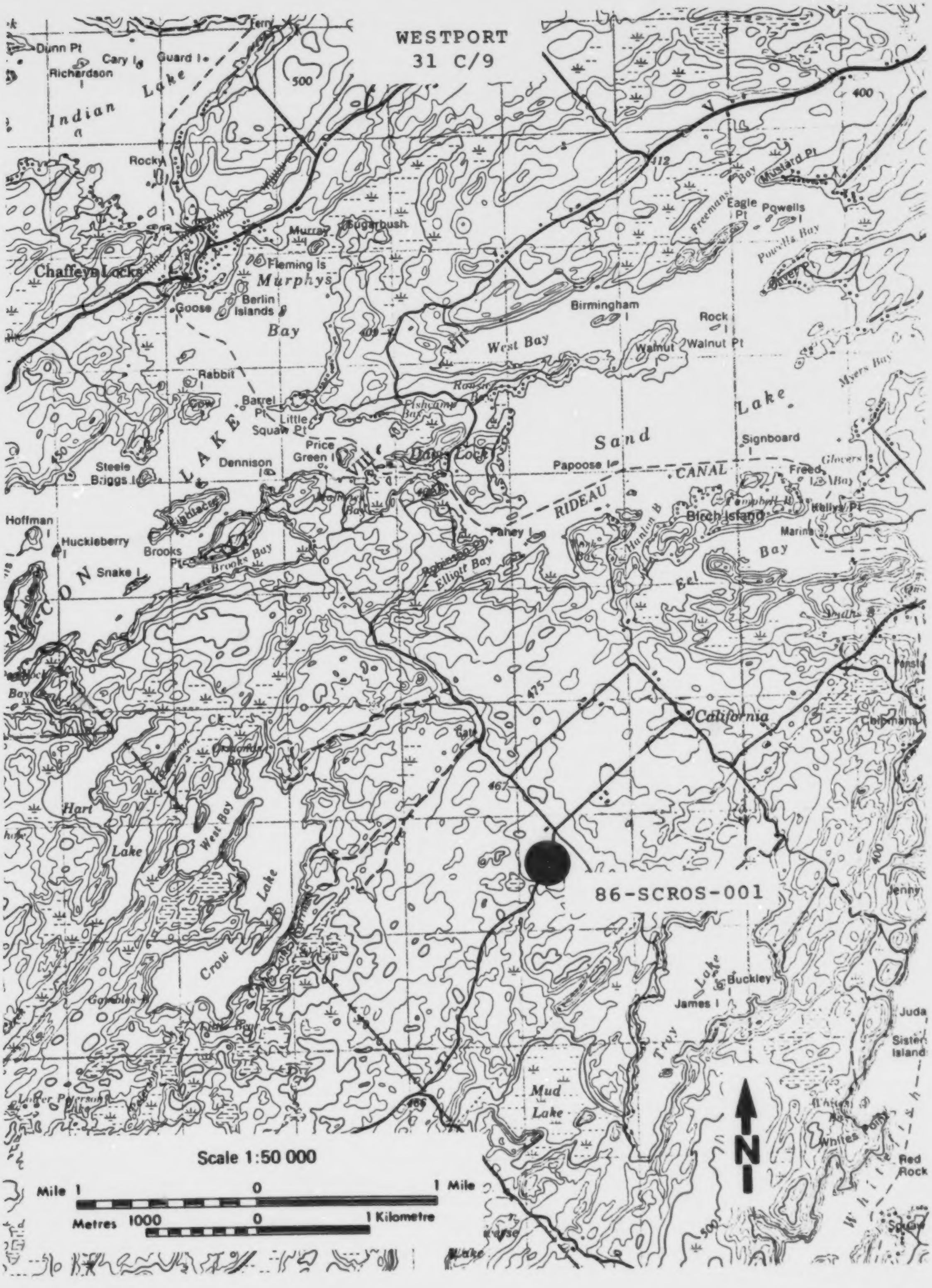
WESTPORT
31 C/9
86-SCROS-001
Chaffeys Locks
Indian Lake
Murphys Bay
Sand Lake
RIDEAU CANAL
Eel Bay
California
Crow Lake
Hart Lake
Mud Lake
Troy Lake
Birch Island
West Bay
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B9. Sample location, Crow Lake pluton.

86-SCRO-001

PROPERTY NO. 86-SCRO-001 **PLUTON NAME** Crowe Lake Pluton

PROPERTY NAME California **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP South Crosby **LOT** 7 **CONC.** 9

NTS 31 C/9 **UTM CO-ORDINATES** Easting 398300 Northing 4931550

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4437 124-154

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brown
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated-porphyritic Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Foliation

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 080 degrees Dip 090 degrees Spacing 0.5 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Hematite coating on joint faces, trace sulphides observed, plagioclase megacrysts abundant (1 cm).

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a medium-grained, moderately foliated brown quartz monzonite. It contains abundant plagioclase megacrysts. Intensive jointing is characteristic of this site.

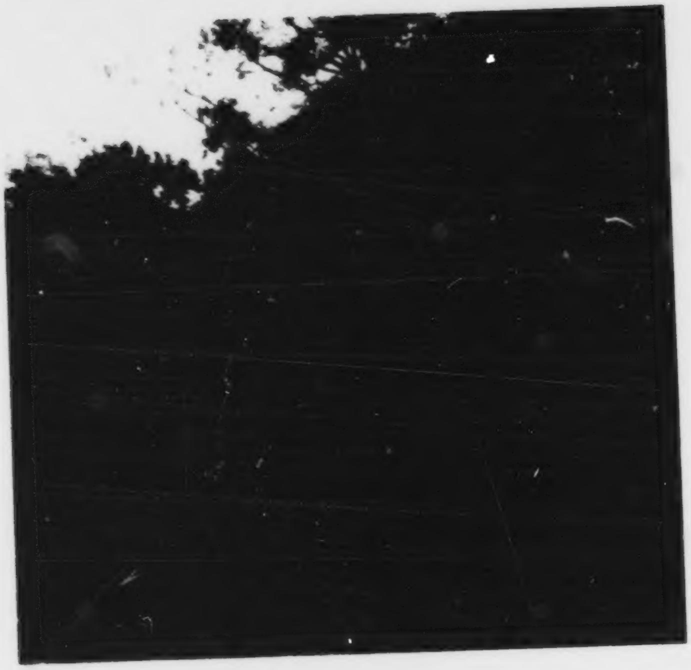

Photo B17. *Overall view of outcrop exhibiting extensive jointing. 86-SCRO-001*

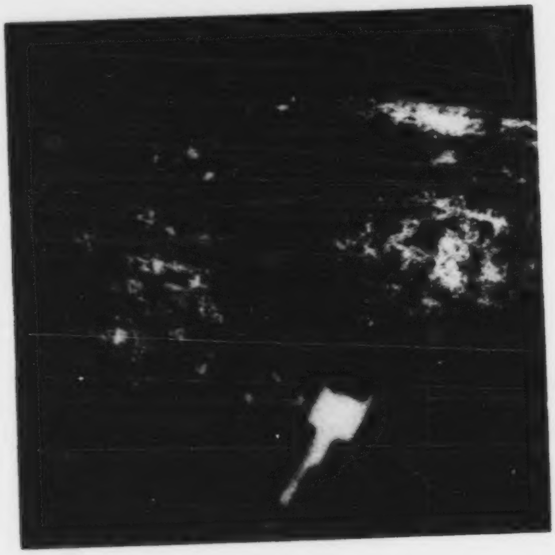

Photo B18. *Fresh surface shows colour, grain size and texture of outcrop. 86-SCRO-001*

DELORO PLUTON

LOCATION West-central Madoc Township and east-central Marmora Township, between Highway 7 and the Moira River

NTS 31 C/12, 5 OGS Maps 2154, P.2613 Geological Report 73 OFR 5537

SAMPLE SITES 86-MAR-005 to 86-MAR-013 inclusive; 86-MAD-002 to 86-MAD-007 inclusive; 86-MAD-010

DESCRIPTION OF AREA

The Deloro pluton is about 10 km long and 6 km wide. It consists of three facies, the dominant type being pink, medium- to coarse-grained perthite granite. Along the western margin, in Marmora Township, is a syenitic phase and in the eastern part is a fine- to medium-grained granophyric granite (Hewitt 1968). The granite is generally quite massive, lacking foliation or lineation, and some of the areas examined exhibit limited jointing favourable for quarry operations.

CONCLUSIONS

The southwestern part of the Deloro pluton, in Marmora Township, shows moderate to good potential for building stone. Other parts may warrant further examination, but access problems within the pluton limit the potential for development to the marginal area.

POTENTIAL

POOR	MODERATE		GOOD
86-MAR-005			
86-MAR-006			
		86-MAR-007	
			86-MAR-008
	86-MAR-009		
		86-MAR-010	
	86-MAR-011		
86-MAR-012			
	86-MAR-013		
86-MAD-002			
86-MAD-003			
86-MAD-004			
86-MAD-005			
86-MAD-006			
86-MAD-007			
	86-MAD-010		

REFERENCES

Barlett, J.R. and Moore, J.M. Jr. 1985. Geology of Belmont, Marmora, and Southern Methuen townships, Peterborough and Hastings counties; Ontario Geological Survey, Open File Report 5537, 236p.

Hewitt, D.F. 1968. Geology of Madoc Township and the north part of Huntingdon Township, Hastings County; Ontario Department of Mines, Geological Report 73, 45p.

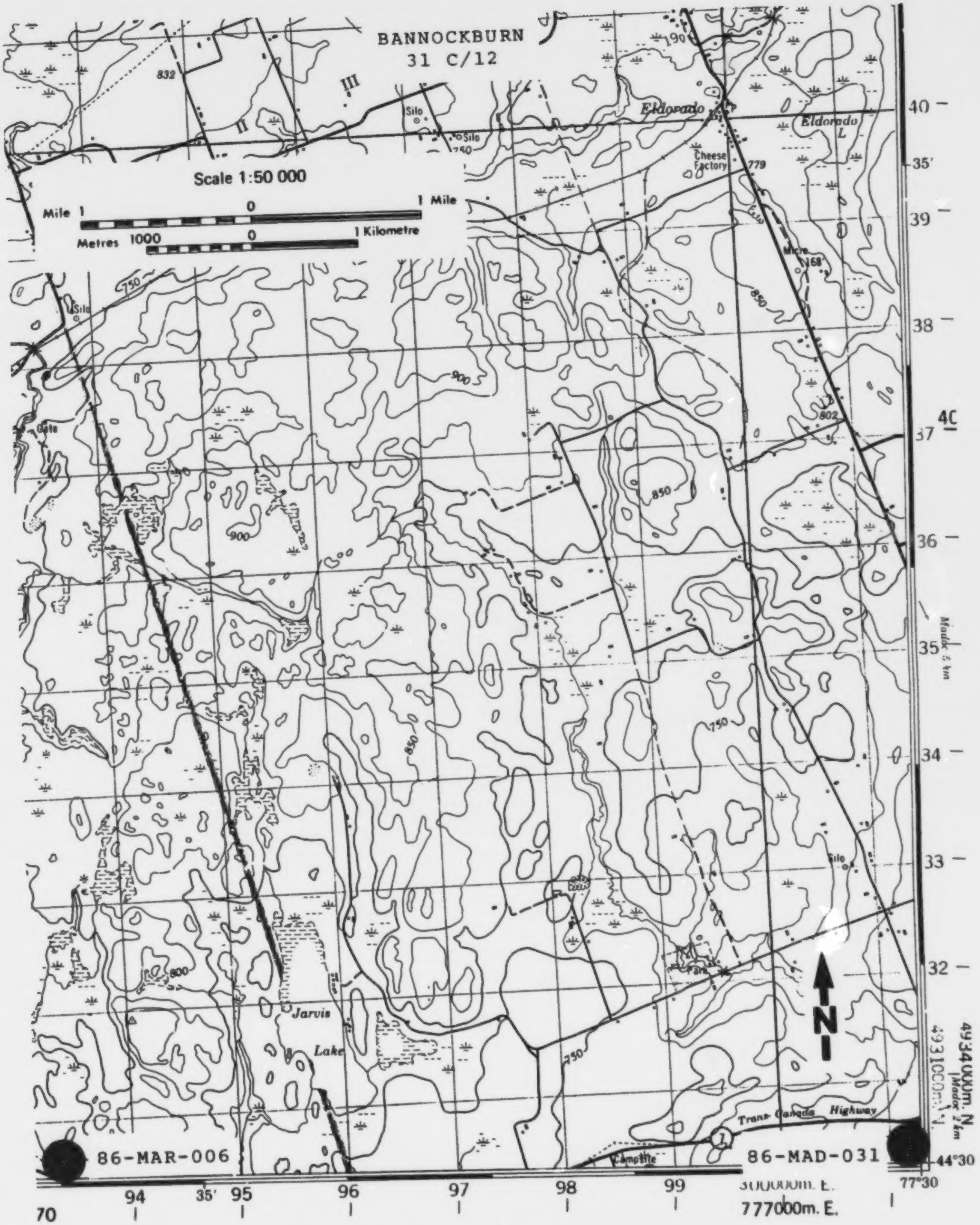
BANNOCKBURN
31 C/12
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Eldorado
Eldorado L
Cheese Factory
Silo
Gate
Jarvis
Lake
Trans Canada Highway
Campsite
Park
N
86-MAR-006
86-MAD-031
40
35′
39
38
37
36
35
34
33
32
4934000m. N.
4931000m. N.
44°30
77°30
70
94
35′
95
96
97
98
99
300000m. E.
777000m. E.
750
850
900
800

Figure B10. Sample locations, Deloro pluton (sheet 1).

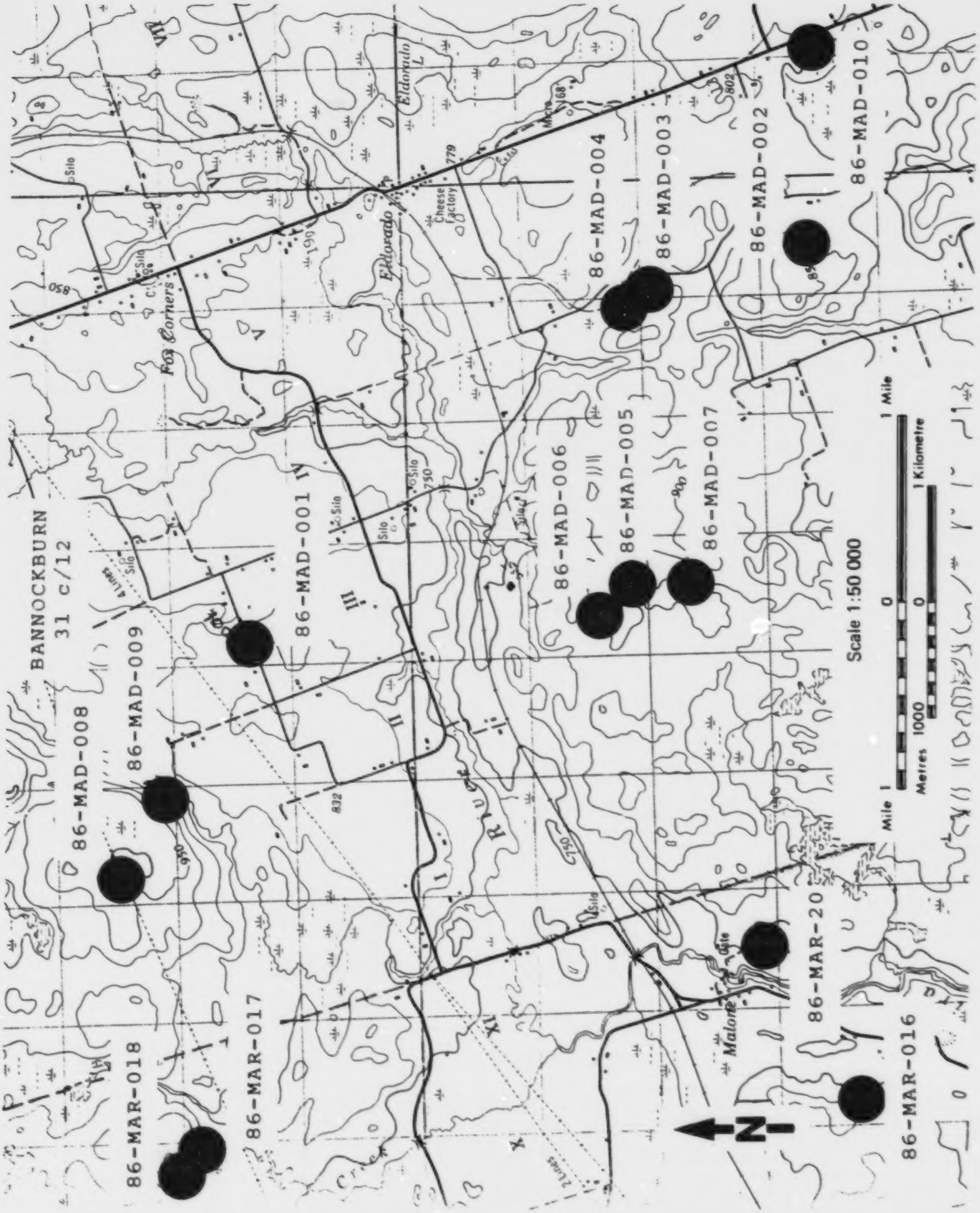
BANNOCKBURN
31 C/12
86-MAR-018
86-MAR-017
86-MAD-008
86-MAD-009
86-MAD-001
86-MAD-006
86-MAD-005
86-MAD-007
86-MAD-004
86-MAD-003
86-MAD-002
86-MAD-010
86-MAR-20
86-MAR-016
Fox Corners
Eldorado
Eldorado L
Cheese Factory
Malone
Creek
River
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B11. Sample locations, Deloro pluton (sheet 2).

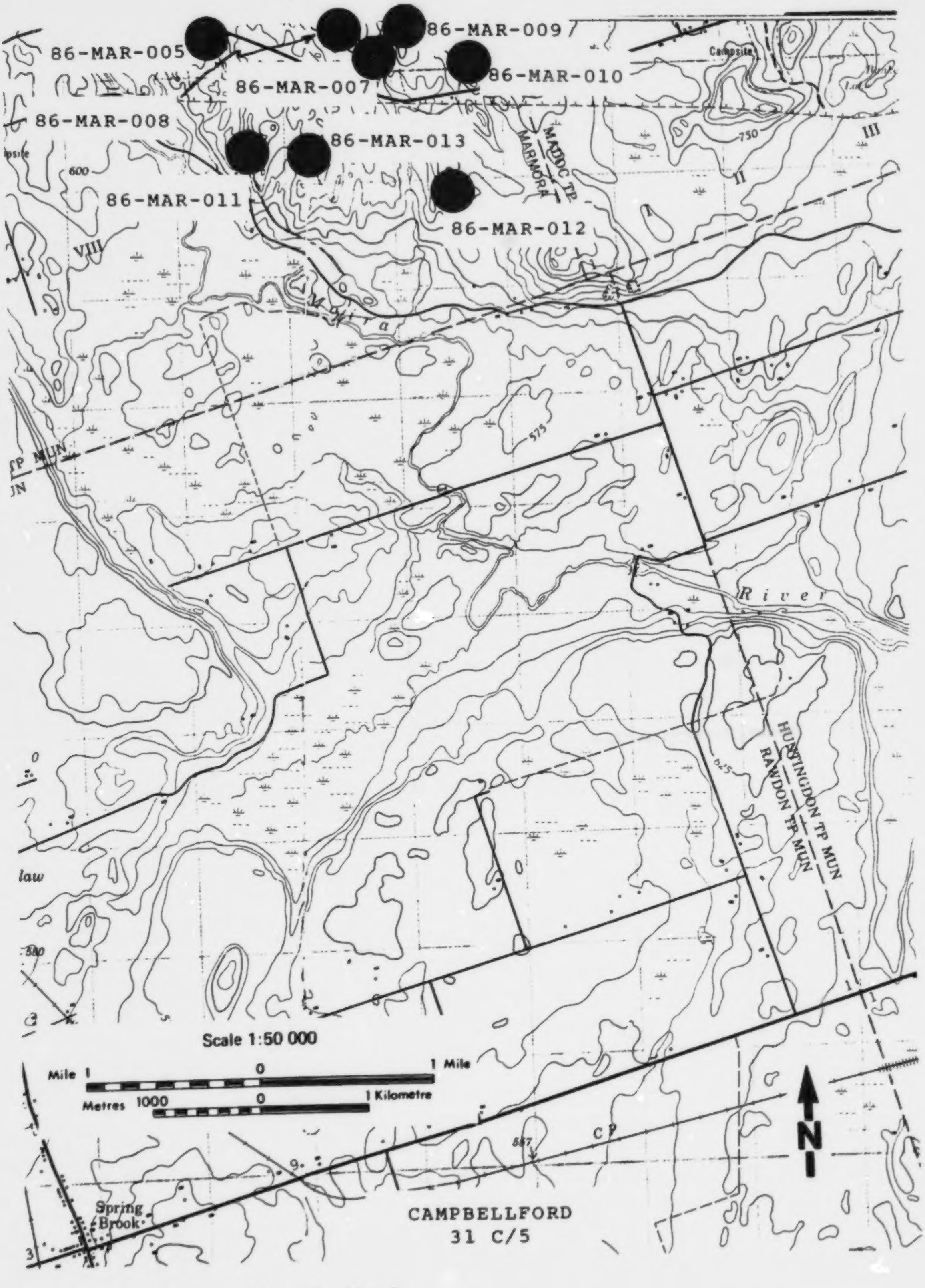
86-MAR-005
86-MAR-009
86-MAR-007
86-MAR-010
86-MAR-008
86-MAR-013
86-MAR-011
86-MAR-012
MADOC TP
MARMORA
Campsite
750
600
II
III
VIII
Moira
575
TP MUN
River
HUNTINGDON TP MUN
RAWDON TP MUN
625
587
law
580
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
C P
Spring Brook
CAMPBELLFORD
31 C/5

Figure B12. Sample locations, Deloro pluton (sheet 3).

86-MAR-005

PROPERTY NO. 86-MAR-005 PLUTON NAME Deloro Pluton

PROPERTY NAME Mar. South of #7 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT 6 CONC. 9

NTS 31 C/5 UTM CO-ORDINATES Easting 393300 Northing 4930350

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435-136-117

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type Explosives used on a roadcut to the north

COLOUR Fresh Surface Pink-brown
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 65 degrees Dip vertical Spacing 0.1 to 1 m
B) Strike 120 degrees Dip vertical Spacing 0.1 to 1 m
C) Strike 175 degrees Dip vertical Spacing 1 to 2 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veining, exfoliation, some hematite staining.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a pinkish-brown, medium-grained granite. The outcrop exposure is good, however, jointing is extensive.

86-MAR-006

PROPERTY NO. 86-MAR-006

PLUTON NAME Deloro Pluton

PROPERTY NAME Hydrocut

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite
(Amphibole perthite)

TOWNSHIP Marmora

LOT 6 CONC. 9

NTS 31 C/12 UTM CO-ORDINATES Easting 393325 Northing 4930500

PROPERTY STATUS Prospect

AIR PHOTO NO. 78-4435-136-117

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

A) Strike	60 degrees	Dip	vertical	Spacing	0.1 to 1 m
B) Strike	140 degrees	Dip	vertical	Spacing	1 to 3 m
C) Strike	horizontal	Dip	0 degrees	Spacing	up to 1 m
D) Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some minor exfoliation - 1 m benches seen, some mafic knots.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, pinkish-brown granite. This site is similar to other areas of the Deloro Pluton in that the outcrop exposure is extensive and the jointing is generally irregular and intensive. Minor exfoliation and rare mafic inclusions were observed.

86-MAR-007

PROPERTY NO. 86-MAR-007 PLUTON NAME Deloro Pluton

PROPERTY NAME Jarvis Lake S.W. COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT 5 CONC. 10

NTS 31 C/5 UTM CO-ORDINATES Easting 394800 Northing 4930170

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435-136-119

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Dark pink
Uniform X Variable

WEATHERING DEPTH 0.5 to 1.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern

Limited Jointing X to Moderate Jointing X Intensive Jointing

A)	Strike 180 degrees	Dip ?	Spacing 0.5 to 2 m
B)	Strike 120 degrees	Dip ?	Spacing 1 to 2 m
C)	Strike 5 degrees	Dip 10 degrees W	Spacing 0.2 to 1 m
D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Good to fair

MINERALOGY K-spar, quartz, minor amphibole

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare aplite dikes 10 to 3 cm, rare quartz veins (1 to 5 cm).

POSSIBLE USES Architectural stone, structural stone, landscaping stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Regular joint sets are spaced at 1 to 3 m intervals and are dissected by poorly defined irregular but generally widely spaced joints. Quartz veining and aplite stringers are not abundant. Subhorizontal sheeting is spaced at .5 to 1.5 m. This area warrants further evaluation.

Photo B19. Overall view of outcrop. Note good exposure along with 1 to 2 m horizontal benches. *86-MAR-007*

86-MAR-008

PROPERTY NO. 86-MAR-008 PLUTON NAME Deloro Pluton

PROPERTY NAME Jarvis Lake SW #2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT N 1/2 5, S 1/2 6 CONC. 10

NTS 31 C/5, 12 UTM CO-ORDINATES Easting 394450 Northing 4930400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435-136-119

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink (light)
Uniform X Variable

WEATHERING DEPTH 0.1 to 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing X Moderate Jointing X Intensive Jointing
A) Strike 170 degrees Dip vertical Spacing 1 to 3 m avg. 1.5
B) Strike 80 degrees Dip vertical Spacing 1 to 4 m avg. 1 m
C) Strike horizontal Dip 0 degrees Spacing 1 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Good

MINERALOGY Amphibole, quartz, K-spar

DELETERIOUS MINERALS Yes X No Type Percent Trace

OTHER FEATURES Irregular hematite staining.

POSSIBLE USES Architectural stone, landscaping stone, structural stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Area looks favourable for the removal of some large quarry blocks, however, horizontal jointing may be a limiting factor. Some surface exfoliation is noted at the 2 cm scale. Area should be investigated further.

***Photo B20.** Good outcrop exposure along with limited to moderate jointing. 86-MAR-008*

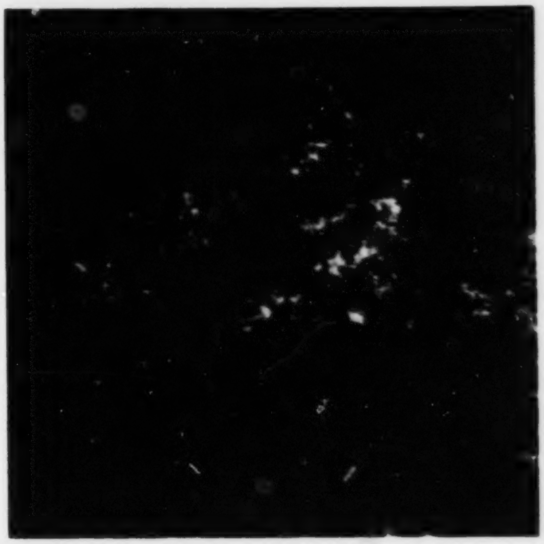

***Photo B21.** Close-up of pink, medium-grained granite. 86-MAR-008*

86-MAR-009

PROPERTY NO. 86-MAR-009 PLUTON NAME Deloro Pluton

PROPERTY NAME Moira River East COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT 5 CONC. E 1/2 10

NTS 31 C/5 UTM CO-ORDINATES Easting 395170 Northing 4930400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435-136-119

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern Minor
Limited Jointing Moderate Jointing X Intensive Jointing

A) Strike 125 degrees	Dip vertical	Spacing 0.5 to 2 m	avg. 1 m
B) Strike horizontal	Dip 0 degrees	Spacing 1 to 2 m	
C) Strike	Dip	Spacing	
D) Strike	Dip	Spacing	

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare hematite staining.

POSSIBLE USES Architectural stone, landscaping stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, massive, pink granite. Jointing is predominantly of a regular repeating nature with moderate spacing and vertical dips. Exfoliation is on the 0.3 m scale.

Photo B22. A 4 m high scarp along north edge of outcrop with 8 m blocks (average) severed from it. 86-MAR-009

86-MAR-010

PROPERTY NO. 86-MAR-010 PLUTON NAME Deloro Pluton

PROPERTY NAME Marmora-Madoc Borderline COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT 4 CONC. 11

NTS 31 C/5 UTM CO-ORDINATES Easting 395700 Northing 4930100

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4435 136-119

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Pink-grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing X Moderate Jointing (X) Intensive Jointing
A) Strike 080 degrees Dip Spacing 2 m
B) Strike 140 degrees Dip Spacing 2 m
C) Strike 035 degrees Dip 090 degrees Spacing 0.5 to 2 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair to good

MINERALOGY Quartz, biotite, potassium feldspar, hornblende

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some minor exfoliation, benches up to 1.5 m, rare quartz pods, hematite patches.

POSSIBLE USES · Monument stone, building stone, ashlar, structural stone, landscaping stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Outcrop shows fair to good potential for large quarry block extraction. Irregular hematite staining and rare quartz pods are present. This area warrants further evaluation.

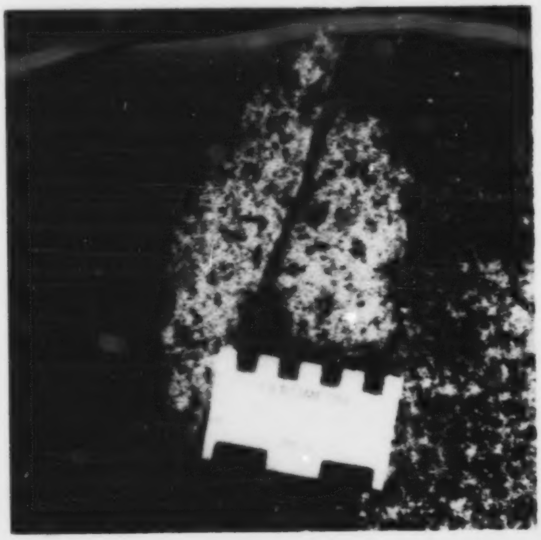

Photo B23. Pinkish-brown, uniform, medium-grained granite. 86-MAR-010

86-MAR-011

PROPERTY NO. 86-MAR-011 PLUTON NAME Deloro Pluton

PROPERTY NAME Moira River COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT 4 CONC. 9

NTS 31 C/5 UTM CO-ORDINATES Easting 393700 Northing 4929250

PROPERTY STATUS Prospect AIR PHOTO NO. 79-4434-137-87

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink-brown
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH ≤0.75 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 90 degrees Dip Spacing 1 to 5 m
B) Strike 45 degrees Dip Spacing 2 to 3 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite, hornblende

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some minor surface exfoliation, 1 quartz stringer noticed extensive hematite staining, mafic inclusions (on the 2 cm scale).

POSSIBLE USES architectural stone, landscaping stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Vertical jointing is predominantly of a regularly repeating nature of moderate intensity. Exfoliation was also observed. Quartz stringers and hematite staining are other features which further diminish building stone potential.

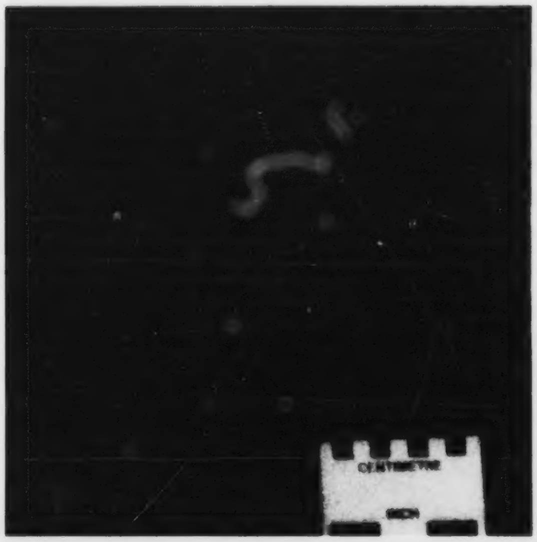
CENTIMETRE
INCH

***Photo B24.** Fresh surface exhibits a pink-brown colour, medium grain size and massive texture. 86-MAR-011*

86-MAR-012

PROPERTY NO. 86-MAR-012 PLUTON NAME Deloro Pluton

PROPERTY NAME Moira River COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Marmora LOT 3 CONC. 10

NTS 31 C/5 UTM CO-ORDINATES Easting 394450 Northing 4928900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4434-137-87

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 2 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 30 degrees Dip 90 degrees Spacing 1 to 2 m
B) Strike 115 degrees Dip 90 degrees Spacing 1 to 2 m
C) Strike 170 degrees Dip 90 degrees Spacing 2 m
horizontal D) Strike Dip Spacing <1 m

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, hornblende, biotite

DELETERIOUS MINERALS Yes X No Type Hematite Percent Trace

OTHER FEATURES Quartz veining, specularite coating, <1 m horizontal sheeting.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a massive, medium-grained granite. The colour is reddish brown and has a very fresh appearance. The outcrop exposure is extensive, however, deleterious features diminish the building stone potential of this rock. These features include regular and irregular joint patterns (joint frequency ranging from moderate to intensive), quartz veining and hematite staining.

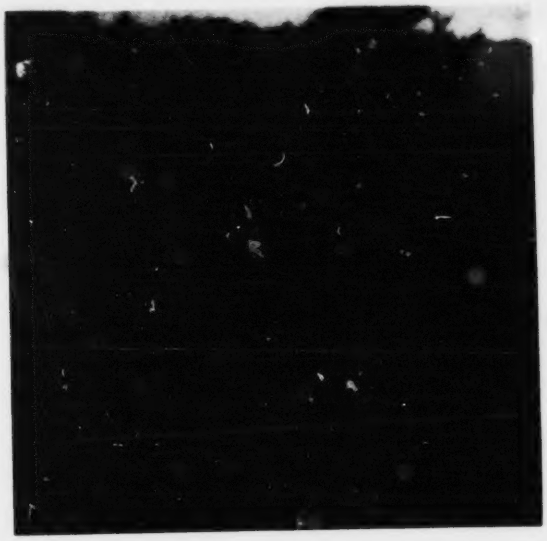

Photo B25. Overall view of moderately to intensely jointed outcrop area. 86-MAR-012

86-MAR-013

PROPERTY NO. 86-MAR-013 PLUTON NAME Deloro Pluton

PROPERTY NAME Marmora North COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite (biotite)

TOWNSHIP Marmora LOT 4 CONC. 9

NTS 31 C/5 UTM CO-ORDINATES Easting 394250 Northing 4929200

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4434-137-87

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Pinkish-white
Uniform X Variable

WEATHERING DEPTH <2 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing X Moderate Jointing Intensive Jointing
A) Strike 115 degrees Dip 90 degrees Spacing 0.5 to 3 m
B) Strike 140 degrees Dip 90 degrees Spacing 1 m
C) Strike 60 degrees Dip 90 degrees Spacing 3 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, hornblende

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Filled joints (centimetre-scale sheeting).

POSSIBLE USES Architectural stone, landscaping stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a massive, medium-grained reddish-brown granite with few deleterious features with respect to building stone requirements. Limited regular vertical joint sets occur primarily in three orientations with spacing averaging about 1 m. Horizontal jointing also occurs on the 1 m scale but exfoliation was observed on the centimetre scale. Quartz filled joints were also observed.

Photo B26. Jointing occurring on a 1 m scale. 86-MAR-013

86-MAD-002

PROPERTY NO. 86-MAD-002 PLUTON NAME Deloro Pluton

PROPERTY NAME Hematite Road #2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Madoc LOT 12 CONC. 4

NTS 31 C/12 UTM CO-ORDINATES Easting 299420 Northing 4936600

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4439-132-80,81

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 0.5 to 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Horizontal sheeting (on the 10 cm scale).

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This is a medium grained, reddish-brown granite of the Deloro pluton (eastern margin). This outcrop has more amphibole than was observed farther to the east. The rock has a very good colour and is very competent. Unfortunately, the intense irregular fractures limit the potential for building stone development.

86-MAD-003

PROPERTY NO. 86-MAD-003 PLUTON NAME Deloro Pluton

PROPERTY NAME Nelson COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Madoc LOT 14 CONC. 4

NTS 31 C/12 UTM CO-ORDINATES Easting 299090 Northing 4937900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4439-132-79,80

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 0.5 to 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, plagioclase, quartz, amphibole

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins (1 to 2 cm width), rare quartz pods (1 by 0.5 feet).

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is medium grained, equigranular with a reddish-brown colour. Quartz veins and pods are present in minor amounts; however, intense jointing limits the building stone potential.

86-MAD-004

PROPERTY NO. 86-MAD-004   PLUTON NAME Deloro Pluton

PROPERTY NAME Nelson's   COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Madoc   LOT 15   CONC. 4

NTS 31 C/12   UTM CO-ORDINATES Easting 298950   Northing 4938150

PROPERTY STATUS Prospect   AIR PHOTO NO. 78-4440-191-96

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes   No X   Type

COLOUR Fresh Surface Pink-brown
Weathered Surface Light pink-grey
Uniform X   Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium   Uniform X   Variable

TEXTURE Massive   Uniform X   Variable

FABRIC Yes   No. X   Weak   Mod.   Strong   Strike   Dip
Formed By

BEDDING Yes   No X   Strike   Dip   Avg. Thickness

JOINTING Regular Pattern X   Irregular Pattern X
Limited Jointing   Moderate Jointing   Intensive Jointing X
A) Strike 10 degrees   Dip vertical   Spacing 1 to 2 m
B) Strike horizontal   Dip   Spacing 0.3 m
C) Strike 100 degrees   Dip vertical   Spacing 0.3 to 1 m
D) Strike   Dip   Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, amphibole, quartz, plagioclase

DELETERIOUS MINERALS Yes   No X   Type   Percent

OTHER FEATURES Quartz veins; 5 mm width.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good   Fair X   Poor

COMMENTS The rock from this outcrop is a pink-brown granite of uniform colour and medium grain size. The outcrop is part of the eastern edge of the Deloro pluton and shows intense irregular jointing and moderate regular jointing. Vertical jointing and intense horizontal sheeting (0.3 m) in this outcrop indicate low potential for quarry blocks.

86-MAD-005

PROPERTY NO. 86-MAD-005   PLUTON NAME Deloro Pluton

PROPERTY NAME Forestry Road   COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Madoc   LOT 15   CONC. 2

NTS 31 C/12   UTM CO-ORDINATES Easting 296600 Northing 4939150

PROPERTY STATUS Prospect   AIR PHOTO NO. 78-4439-132-76,77

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink-brown
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium   Uniform X   Variable

TEXTURE Massive   Uniform X   Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern   Irregular Pattern X
Limited Jointing   Moderate Jointing   Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes No X Type   Percent

OTHER FEATURES Extreme jointing.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a competent, pink-brown, medium-grained granite from the northeast portion of the Deloro pluton. Outcrop exposure is extremely poor and jointing is irregular and intense. These factors diminish building stone potential for this site.

86-MAD-006

PROPERTY NO. 86-MAD-006   PLUTON NAME Deloro Pluton

PROPERTY NAME Eldorado West   COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Madoc   LOT 16   CONC. 2

NTS 31 C/12   UTM CO-ORDINATES Easting 296350 Northing 4938430

PROPERTY STATUS Prospect   AIR PHOTO NO. 78-4440-191-94

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes   No X   Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Light pink
Uniform X   Variable

WEATHERING DEPTH 1 to 15 cm

GRAIN SIZE Medium   Uniform X   Variable

TEXTURE Massive   Uniform X   Variable

FABRIC Yes   No. X   Weak   Mod.   Strong   Strike   Dip
Formed By

BEDDING Yes   No X   Strike   Dip   Avg. Thickness

JOINTING Regular Pattern X   Irregular Pattern X
Limited Jointing   Moderate Jointing   Intensive Jointing X
A) Strike 44 degrees Dip   Spacing 0.3 m
B) Strike   Dip   Spacing
C) Strike   Dip   Spacing
D) Strike   Dip   Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, plagioclase, quartz, amphibole

DELETERIOUS MINERALS Yes   No X   Type   Percent

OTHER FEATURES Rare quartz veins (1 cm width). Horizontal sheeting closely spaced - 0.1 to 0.5 m.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good   Fair X   Poor

COMMENTS This rock is a reddish-brown, medium-grained, massive granite. The closely spaced horizontal sheeting, inaccessibility and poor outcrop exposure diminish the building stone potential of this rock.

86-MAD-007

PROPERTY NO. 86-MAD-007 **PLUTON NAME** Deloro Pluton

PROPERTY NAME Hunting Shack **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Madoc **LOT** 14 **CONC.** 2

NTS 31 C/12 **UTM CO-ORDINATES** Easting 296600 Northing 4937650

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4440-191-94

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish-brown
Weathered Surface Light pink to grey
Uniform X Variable

WEATHERING DEPTH

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes X No Type Sulphides Percent <1%

OTHER FEATURES Amphibole shows signs of alteration, aplite dikes (rare).

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Despite the fact that this site is closer to the pluton interior than other sites of the Deloro pluton, intense irregular jointing is still the predominant factor which limits this site's potential for building stone development. The grain size was observed to be variable in certain areas of this exposure. Rare aplite dikes were also observed.

86-MAD-010

PROPERTY NO. 86-MAD-010 PLUTON NAME Deloro Pluton

PROPERTY NAME Hazzards Corners Road COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Red Granite

TOWNSHIP Madoc LOT 11 NE 1/4 CONC. 5

NTS 31 C/12 UTM CO-ORDINATES Easting 301100 Northing 4936500

PROPERTY STATUS Inactive AIR PHOTO NO. 78-4439-132-84,85

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 35 degrees Dip Vertical Spacing 0.5 m
B) Strike 80 degrees Dip Vertical Spacing 0.5 m
C) Strike 160 degrees Dip Vertical Spacing 1 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY K-spar, quartz, biotite, hornblende

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some horizontal jointing 0.5 m spacing, hematite staining, some quartz veining.

POSSIBLE USES Ornamental stone, paving stone, ashlar, curbing stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This red granite is not particulanly attractive and would be unsuited for a quarry operation due to irregular jointing pattern. The rock is a medium-grained, massive, leucocratic granite. Some limited quartz veining and hematite staining were noted.

Photo B27. Overall view of outcrop exposure. Note vertical and horizontal jointing. 86-MAD-010

ELZEVIR BATHOLITH

LOCATION Most of Elzevir Township and the northwest corner of Kaladar Township

NTS 31 C/11 OGS Map 51D Geological Report AR 51, pt.4

SAMPLE SITES 86-KAL-001, 86-KAL-002, 86-KAL-004, 86-KAL-005, 86-ELZ-001, 86-ELZ-002, 86-ELZ-003, 86-ELZ-004, 86-ELZ-005, 86-ELZ-006, 86-ELZ-007, 86-ELZ-008, 86-ELZ-009

DESCRIPTION OF AREA

Rock types observed within the Elzevir batholith consist predominantly of feldspar (mostly plagioclase, occasionally K-spar) quartz and biotite, and include the following:

1. Massive (sometimes weakly foliated), white, medium-grained granodiorite e.g., (ELZ-002A, 004, 009, KAL-002)

2. Well-foliated, grey, fine-grained granodiorite e.g., (ELZ-002B, 005, 006, 007)

Rock type (1) probably has best potential for use as building stone. Rock type (2) may have some application as monument stone due to its darker colour and fine-grained character, but there is a possibility that considerable variation occurs in this unit. The darker colour may be attributed to higher mafic mineral content (more biotite) which would result in a less competent rock that may tend to localize deformation. Differing degrees of deformation or mafic mineral content would create variable colour and texture. Volumetrically, rock type (1) is obviously more significant than rock type (2).

For most outcrops, moderate to intense jointing appears to be the limiting factor (ie., difficult to delineate joint-free areas large enough to produce quarry blocks). In some areas, abundance of mafic inclusions, felsic stringers/dikes and/or quartz veining becomes important, but these features are usually accompanied by intense jointing.

Central portions of the intrusion offer little or no access along with difficult terrain (predominantly swamp). Although the intrusive core should generally produce more desirable massive textures and less jointing, limited exposure and access indicate further investigation is not warranted.

Examination of the Northern portion of the intrusion was not successful due to poor access. Hydro line exposures delineated by airphoto inspection occur just north of McKnight Lake in Grimsthorpe Township (Lots 11, 12, Concession I) and west of Slave Lake in Anglesea Township (Lots 20, 21, Concessions III, IV). Suggested access for the Grimsthorpe exposure is through Cooper from the west and for the Anglesea exposure, through Cloyne, from the east.

Further examination of the southeastern margins of Elzevir batholith is recommended (Lots 6, 7, 8, Concession X and Lots 8, 9, 10, 11, Concession XI - as per Osborne (1931); in particular, Lots 8, 9, Concession XI due to immediate proximity to 86-ELZ-004, the best prospect identified to date in the Elzevir batholith. Systematic detailed ground coverage may be warranted in the area of 86-ELZ-004.

Also recommended for investigation is Lot 6, Concession V (after Parks 1912). Another area of good exposure delineated by air inspection is Lot 20, Concession III along Queensborough Creek. Access is from Concession Road IV.

CONCLUSION

In general, building stone potential in the Elzevir batholith appears poor due to reasons given (jointing, inclusions, quartz, veins, and so on). Most areas would only be suitable for ashlar, paving stone, landscaping stone, or rubble which alone do not justify a quarry operation. The large joint-free areas of 86-ELZ-004 identify the potential for quarry blocks along the southeastern margin as an exception.

POTENTIAL

POOR		MODERATE	GOOD
	86-KAL-001		
	86-KAL-002		
86-KAL004			
	86-KAL-005		
86-ELZ-001			
86-ELZ-002			
	86-ELZ-003		
		86-ELZ-004	
86-ELZ-005			
	86-ELZ-006		
	86-ELZ-007		
	86-ELZ-008		
	86-ELZ-009		

REFERENCES

Hewitt, D.F. 1968. Geology of Madoc Township and the north part of Huntingdon Township, Hastings County; Ontario Department of Mines, Geological Report 73, 45p.

Meen, V.B., and Harding, W.D. 1942. Grimsthorpe-Kennebec area, counties of Hastings, Lennox and Addington, and Frontenac, Ontario; Ontario Department of Mines, Map 51D, scale 1:63 360.

Osborne, F.F. 1931. Non-metallic mineral resources of Hastings County; Ontario Department of Mines, Annual Report, 1930, v.39, pt.6, p.22-59.

Parks, W.A. 1912. Building and ornamental stones of Canada; Canada Department of Mines, Report no.100.

Wolff, J.M. 1982. Geology of the Kaladar area, Frontenac, and Lennox and Addington counties; Ontario Geological Survey, Report 215, 94p.

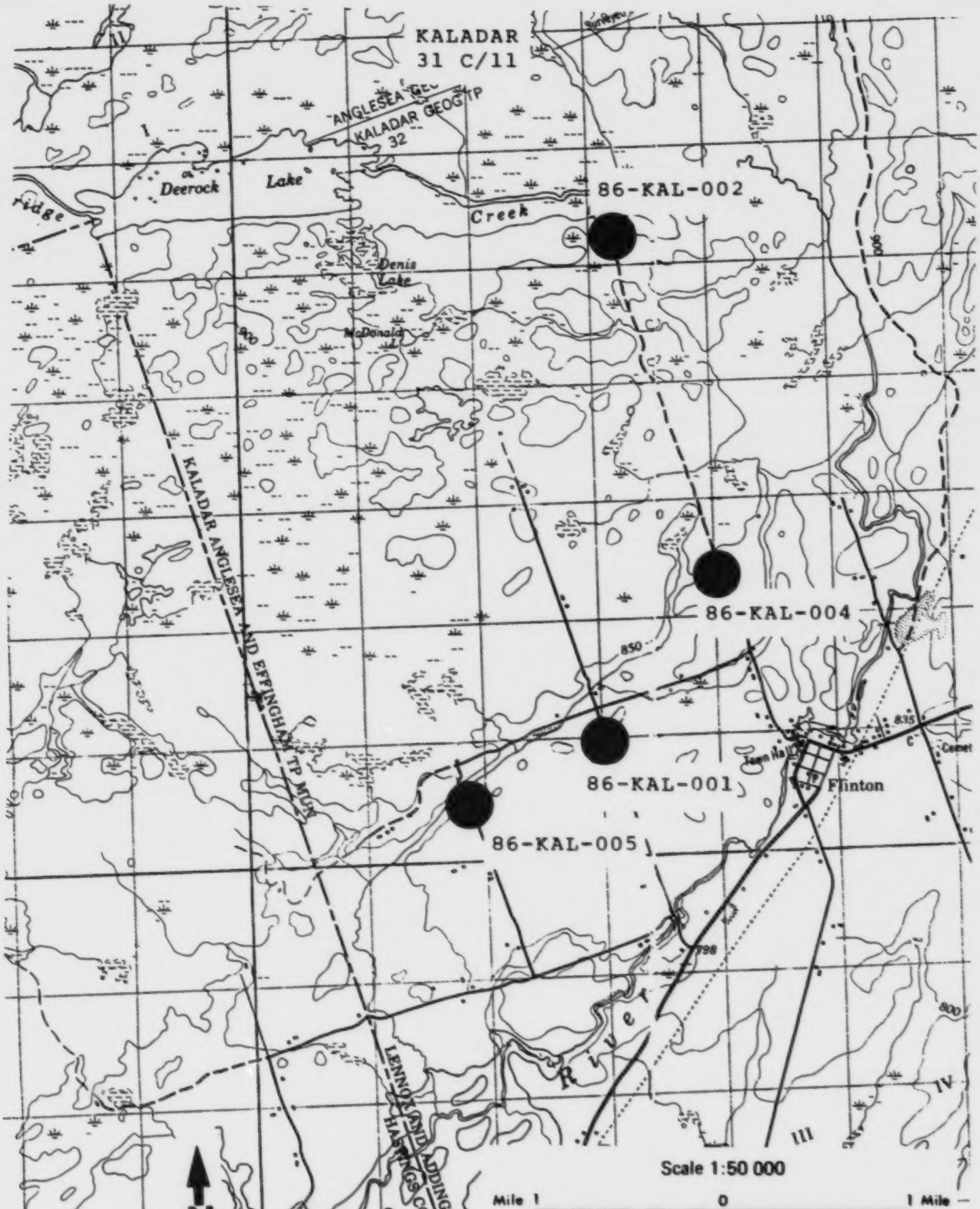
KALADAR
31 C/11
ANGLESEA GEOG TP
KALADAR GEOG TP
32
Deerock
Lake
Creek
Denis Lake
McDonald
86-KAL-002
86-KAL-004
86-KAL-001
86-KAL-005
KALADAR ANGLESEA AND EFFINGHAM TP MUN
LENNOX AND ADDINGTON COUNTY
HASTINGS COUNTY
Town Hall
Flinton
Cornet
River
850
835
790
800
750
III
IV
XI
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B13. Sample locations, Elzevir batholith (sheet 1).

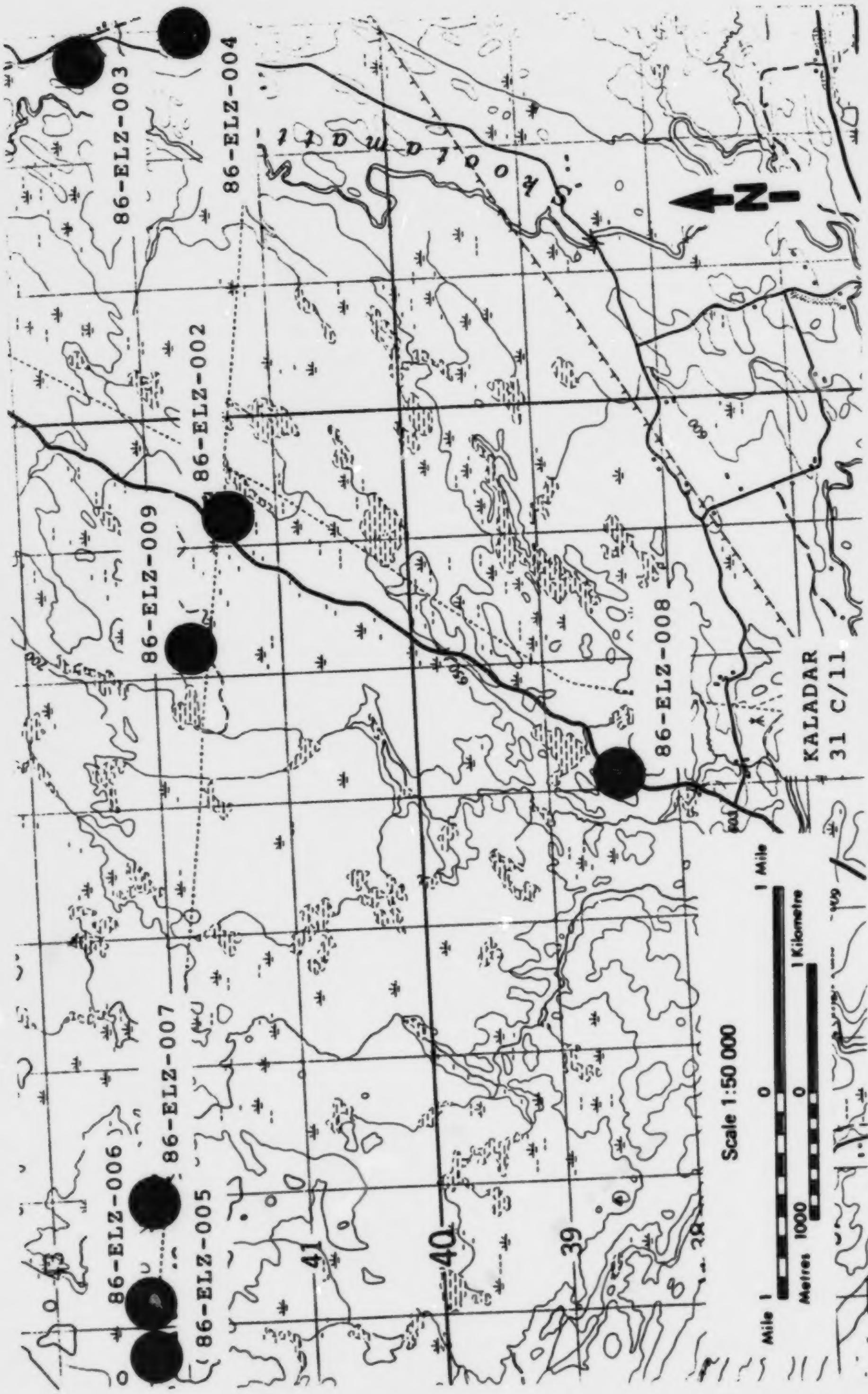
86-ELZ-003
86-ELZ-004
86-ELZ-002
86-ELZ-009
86-ELZ-008
86-ELZ-006
86-ELZ-007
86-ELZ-005
Skootamatta
N
KALADAR
31 C/11
43
41
40
39
38
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B14. Sample locations, Elzevir batholith (sheet 2).

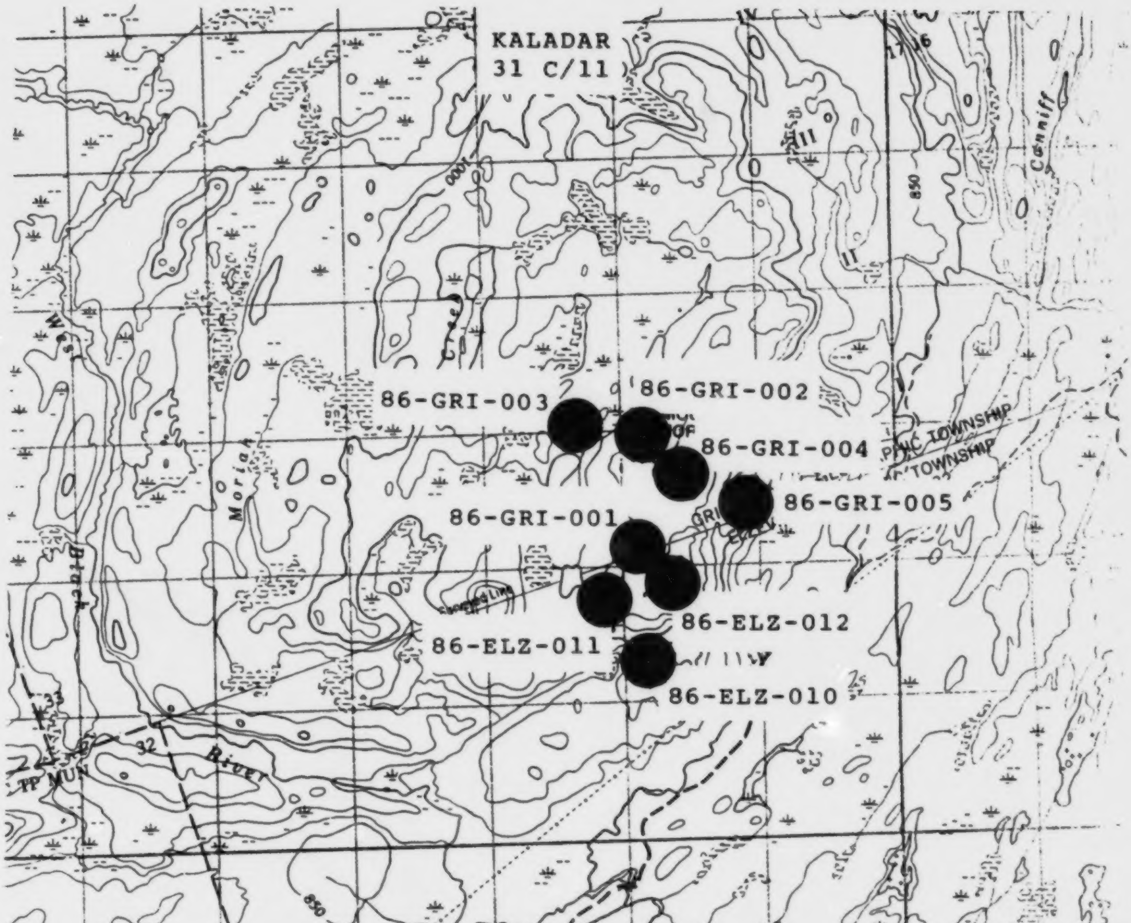
KALADAR
31 C/11
86-GRI-003
86-GRI-002
86-GRI-004
86-GRI-005
86-GRI-001
86-ELZ-012
86-ELZ-011
86-ELZ-010
86-ElZ-001
TOWNSHIP
West
Black
River
Moriah
Creek
Conniff
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
Cemetery

Figure B15. Sample locations, Elzevir batholith (sheet 3).

86-KAL-001

PROPERTY NO. 86-KAL-001 **PLUTON NAME** Elzevir Batholith

PROPERTY NAME Flinton 1 **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Kaladar **LOT** 23 **CONC.** 1

NTS 31 C/11 **UTM CO-ORDINATES** Easting 323000 Northing 4950900

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4448-128-15

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type For roadwork

COLOUR Fresh Surface Grey
Weathered Surface Light grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike Dip
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing (X)

A) Strike 103 degrees	Dip 48 degrees S	Spacing 0.5 to 2 m
B) Strike 05 degrees	Dip vertical	Spacing 0.3 to 1 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Limited quartz veining and pods (less than 15 cm in width); rare but large mafic xenoliths up to 20 m long.

POSSIBLE USES Ashlar, paving stone, landscaping stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS Jointing is moderate to intense with some quartz veining and mafic inclusions. Outcrop exposure is poor.

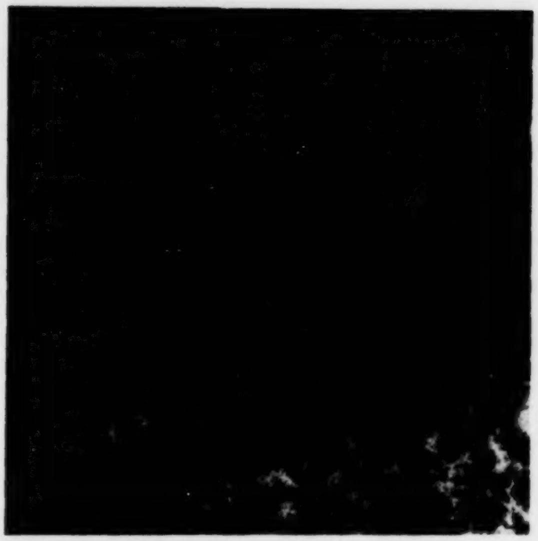

Photo B28. Textural close-up of light grey granodiorite. 86-KAL-001

86-KAL-002

PROPERTY NO. 86-KAL-002 **PLUTON NAME** Elzevir Batholith

PROPERTY NAME Deerock Lake **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Kaladar **LOT** 29 **CONC.** 4

NTS 31 C/11 **UTM CO-ORDINATES** Easting 323200 Northing 4955300

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4451-143-72

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike 95 degrees
Dip 80 degrees N
Formed By Alignment of biotite

BEDDING Yes No X Strike . Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing (X)

A) Strike	120 degrees	Dip	Steep	Spacing	0.5 to 1 m
B) Strike	020 degrees	Dip	Steep	Spacing	1 to 3 m
C) Strike		Dip		Spacing	
D) Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veining and pods, one mafic inclusion observed.

POSSIBLE USES Paving stone, ashlar, landscaping stone, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Jointing is moderate and may facilitate the extraction of small quarry blocks. Some quartz veining and rare mafic inclusions are present.

86-KAL-004

PROPERTY NO. 86-KAL-004 PLUTON NAME Elzevir Batholith

PROPERTY NAME Cow Hill COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Kaladar LOT 24, 25 CONC. 3

NTS 31 C/11 UTM CO-ORDINATES Easting 324000 Northing 4952300

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4449 129-5

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface White (with biotite flakes) grey
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable (X)

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike 85 degrees
Dip 80 degrees E
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Abundant quartz veining and granitic/aplite stringers/dikes/pods, mafic inclusions also noted.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Similar to the other sites visited in the Elzevir batholith. This property displays poor potential for building stone due to the abundance of quartz veining, felsic stringers, and larger aplite dikes and pods. Mafic inclusions were also noted at this site. This is a medium-grained, weakly foliated, grey granodiorite.

Photo B29. Quartz stringers in grey granodiorite. 86-KAL-004

86-KAL-005

PROPERTY NO. 86-KAL-005 PLUTON NAME Elzevir Batholith

PROPERTY NAME Flinton-2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Kaladar LOT 23 CONC. 1, 2

NTS 31 C/11 UTM CO-ORDINATES Easting 321900 Northing 4950400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-128-16

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface Grey-white
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike 150 degrees
Dip Steep
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 175 degrees Dip 060 degrees E Spacing 2 to 3 m
B) Strike 080 degrees Dip 090 degrees Spacing 1 to 2 m
C) Strike 040 degrees Dip 090 degrees Spacing 0.5 to 1.0 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Abundant quartz veins and pods mostly west of road (up to 0.3 m wide), occasional mafic inclusions (0.5 to 3 m wide) minor felsic stringers.

POSSIBLE USES Ashlar, paving stone, small quarry blocks, landscaping stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a medium-grained, weakly foliated, grey granodiorite. Deleterious features include numerous quartz veins and pods, mafic inclusions, minor felsic stringers and inconsistent jointing.

86-ELZ-001

PROPERTY NO. 86-ELZ-001
PLUTON NAME Elzevir Batholith
PROPERTY NAME Queensborough Creek
COMMERCIAL STONE NAME Granite
GEOLOGICAL ROCK NAME Quartz Diorite to Granodiorite

TOWNSHIP Elzevir
LOT 22
CONC. 3

NTS 31 C/11
UTM CO-ORDINATES Easting 310500 Northing 4946000

PROPERTY STATUS Prospect
AIR PHOTO NO. 78-4445-106-118

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey (white with biotite flakes)
Weathered Surface Grey
Uniform X Variable (X)

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Foliated (rarely massive) Uniform Variable X

FABRIC Yes X No. Weak X Mod. Strong Strike 105 degrees Dip
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing (X) Intensive Jointing X

A) Strike	83 degrees	Dip	Spacing	0.5 to 1 m	Conjugate
B) Strike	143 degrees	Dip	Spacing	0.5 to 1 m	Joints
C) Strike		Dip	Spacing		
D) Strike		Dip	Spacing		

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes X No Type Chlorite (alteration of biotite) Percent Trace

OTHER FEATURES Rare mafic inclusions, quartz veining, felsic stringers

POSSIBLE USES Ashlar, paving stone, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This is a grey granodiorite with a weak foliation. Both regular and irregular joint patterns are present and joint intensity ranges from moderate to intense. Joint intensity decreases towards the northeastern part of the area.

86-ELZ-002

PROPERTY NO. 86-ELZ-002   PLUTON NAME Elzevir Batholith

PROPERTY NAME County Road 2
(Flinton Road)
at Hydro line   COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir   LOT 10   CONC. 8

NTS 31 C/11   UTM CO-ORDINATES Easting 319200   Northing 4941400

PROPERTY STATUS Prospect   AIR PHOTO NO. 78-4439-132-85,86

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes   No X   Type

COLOUR Fresh Surface Grey
Weathered Surface Grey
Uniform   Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium to very fine   Uniform   Variable X

TEXTURE Massive to foliated   Uniform   Variable X

FABRIC Yes X No.   Weak X Mod.   Strong   Strike   Dip
Formed By Alignment of biotite

BEDDING Yes   No X   Strike   Dip   Avg. Thickness

JOINTING Regular Pattern   Irregular Pattern X
Limited Jointing   Moderate Jointing   Intensive Jointing X

A)	Strike 130 degrees	Dip 065 degrees E	Spacing 0.5 m
B)	Strike	Dip	Spacing
C)	Strike	Dip	Spacing
D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes   No X   Type   Percent

OTHER FEATURES Quartz veining, felsic stringers

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good   Fair   Poor X

COMMENTS The rock in this area is grey to white granodiorite. This area appears to be intensely jointed and shows a wide variation in texture and colour. The western portion of the area contains massive, medium-grained biotite granodiorite while to the east, the rock is fine grained and foliated.

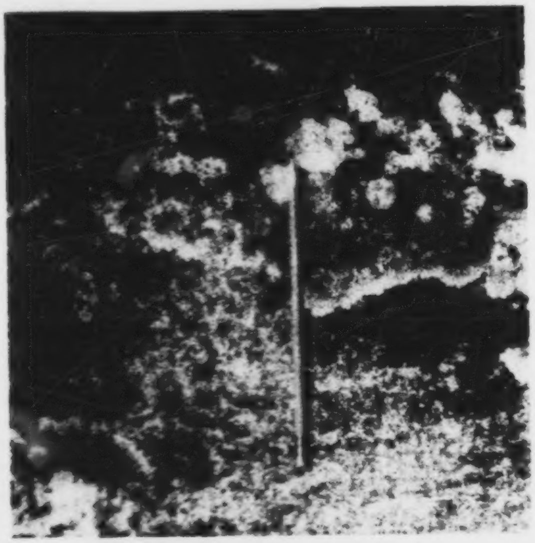

Photo B30. Close-up view depicting both weathered and fresh surfaces. 86-ELZ-002

86-ELZ-003

PROPERTY NO. 86-ELZ-003 PLUTON NAME Elzevir Batholith

PROPERTY NAME Skootamatta River COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir LOT 10 CONC. 11

NTS 31 C/11 UTM CO-ORDINATES Easting 322800 Northing 4942400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4440-191-106

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface Pinkish Grey
Uniform Variable X

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing (X)

A)	Strike 100 degrees	Dip 90 degrees	Spacing 0.5 (to 2 m)
B)	Strike subhorizontal	Dip	Spacing 0.5 m see photo
C)	Strike 120 degrees	Dip 80 degrees W	Spacing 0.5 to 1.5 m
D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veining and pods, some horizontal sheeting observed in 3 m scarp.

POSSIBLE USES Ashlar, paving stone, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a massive, medium-grained, grey granodiorite. Jointing is generally intense, however, some areas display a limited potential for small quarry blocks. Rare quartz veins and pods are present.

Photo B31. A 3 m scarp showing subhorizontal sheeting; approximately 100 to 130 m west of road. 86-ELZ-003

86-ELZ-004

PROPERTY NO. 86-ELZ-004 PLUTON NAME Elzevir Batholith

PROPERTY NAME Flinton Creek COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir LOT 8 CONC. 11

NTS 31 C/11 UTM CO-ORDINATES Easting 323000 Northing 4941550

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4439-132-90

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive to slightly foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike 020 degrees
Dip 70 degrees W
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing X Moderate Jointing X Intensive Jointing

	Strike		Dip		Spacing
A)	Strike	110-120 degrees	Dip	090 degrees	Spacing 0.5 to 5.0 m (subparallel to foliation)
B)	Strike	020 degrees	Dip	090 degrees	Spacing 0.5 to 5.0 m
C)	Strike	subhorizontal	Dip		Spacing 1 m
D)	Strike	subhorizontal	Dip		Spacing 0.2 to 0.5 m

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Minor quartz veining (rare 10 cm wide to mm scale joint fillings) - one pegmatite dike (1 m wide) observed - minor surface exfoliation.

POSSIBLE USES Potentially small quarry blocks, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This medium-grained, grey granodiorite has a weak foliation. Quartz veins commonly occur subparallel to foliation or subparallel to the major joint sets. Exfoliation is evident in local areas. Major joint sets are widely spaced, however, weakly developed joints are closer spaced and generally form irregular patterns. This area is recommended for further evaluation.

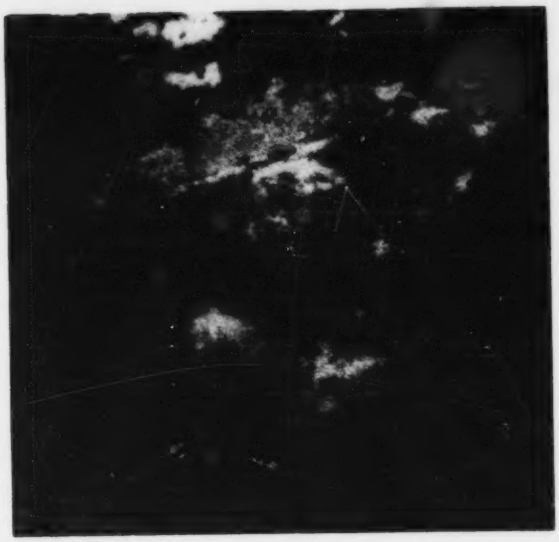

Photo B32. A 2 m high outcrop along access road showing subhorizontal jointing. 86-ELZ-004.

86-ELZ-005

PROPERTY NO. 86-ELZ-005 PLUTON NAME Elzevir Batholith

PROPERTY NAME Barry Farm-1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir LOT 15 CONC. 4

NTS 31 C/11 UTM CO-ORDINATES Easting 312750 Northing 4942250

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4442-142-86

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark grey to white
Weathered Surface Grey
Uniform Variable X

WEATHERING DEPTH 1 cm

GRAIN SIZE Fine-medium Uniform Variable X

TEXTURE Gneissic to massive Uniform Variable X

FABRIC Yes X No. Weak X Mod. to Strong X Strike Dip
Formed By Gneissic Banding

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

A) Strike 115 degrees	Dip 090 degrees	Spacing 0.5 to 1.0 m
B) Strike 090 degrees	Dip 090 degrees	Spacing 0.5 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Abundant quartz veining (mostly related to 115 degrees jointing, occasional pegmatite and aplite dikes/stringers, rare mafic inclusions.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS The rock in this area varies between fine-grained, dark grey, well foliated granodiorite to medium-grained, grey, massive granodiorite. The textural variation coupled with the intense jointing and quartz veining limits the building stone potential of this site.

86-ELZ-006

PROPERTY NO. 86-ELZ-006 PLUTON NAME Elzevir Batholith

PROPERTY NAME Barry Farm-2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir LOT 14 CONC. 4

NTS 31 C/11 UTM CO-ORDINATES Easting 313150 Northing 4942200

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4442-142-86

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Greyish
Weathered Surface Grey-pinkish
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Slightly foliated to massive Uniform X Variable X

FABRIC Yes X No. Weak Mod. X Strong Strike 100 degrees
Dip 80 degrees E
Formed By Mineral alignment - biotite, some quartz and feldspar

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing (X)
A) Strike 095 degrees Dip 090 degrees Spacing 0.5 to 2.5 m avg. 1.7 m
B) Strike 015 degrees Dip 090 degrees Spacing 0.5 to 3.0 m avg. 1.0 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veining, aplite stringers and dikes (0.2 m wide) extensive exfoliation.

POSSIBLE USES Paving stone, ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a slightly foliated grey granodiorite. Quartz veining, granitic stringers and extensive exfoliation are present in this area. Small 10 by 10 m areas show limited jointing.

86-ELZ-007

PROPERTY NO. 86-ELZ-007 **PLUTON NAME** Elzevir Batholith

PROPERTY NAME Elzevir Creek **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Elzevir **LOT** 14 **CONC.** 5

NTS 31 C/11 **UTM CO-ORDINATES** Easting 313900 Northing 4942100

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4443-187-226

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey-white
Weathered Surface Grey-white
Uniform X Variable (X)

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable (X)

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 025 degrees
Dip 80 degrees E
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing (X)

A) Strike 140 degrees	Dip 090 degrees	Spacing 0.5 to 1.5 m
B) Strike 085 degrees	Dip 070 degrees N	Spacing 0.5 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Abundant felsic stringers (average 1 cm wide), minor quartz veining, surface exfoliation common (1 to 2 cm thick).

POSSIBLE USES Landscaping stone, ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a moderately foliated, medium-grained, grey granodiorite. Jointing is moderate in local areas. Numerous granitic and quartz veins and stringers occur throughout area.

Photo B33. East-facing slope of outcrop. Note exfoliation toward bottom left. 86-ELZ-007

86-ELZ-008

PROPERTY NO. 86-ELZ-008 PLUTON NAME Elzevir Batholith

PROPERTY NAME Theresa 603 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir LOT 6,7 CONC. 6

NTS 31 C/11 UTM CO-ORDINATES Easting 317100 Northing 4038450

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4440-191-114

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface Pinkish white
Uniform X Variable (X)

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 028 degrees
Dip 80 degrees E
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing (X)

A) Strike	120 degrees	Dip 090 degrees	Spacing 0.5 to 2.0 m avg. 1 m
B) Strike	040 degrees	Dip 090 degrees	Spacing 0.3 to 1.5 m
C) Strike		Dip	Spacing
D) Strike		Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Moderate quartz veining (average 3 cm wide) associated with joint set at 120 degrees, minor local oblique jointing, felsic stringers.

POSSIBLE USES Landscaping stone, ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a medium-grained, moderately foliated granodiorite. Jointing occurs in regular joint sets. The quartz veins present in this outcrop are associated with the 120 degree joint set. Joint spacing is generally less than 1 m. A 6 m cliff on the west side of the road shows subhorizontal jointing with 1 to 2 m spacing. Rare oblique jointing is also present.

86-ELZ-009

PROPERTY NO. 86-ELZ-009 PLUTON NAME Elzevir Batholith

PROPERTY NAME Cerqua Hunt Camp COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Elzevir LOT 11 CONC. 7

NTS 31 C/11 UTM CO-ORDINATES Easting 318200 Northing 4941700

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4442-142-92

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface Grey
Uniform X Variable (X)

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Slightly foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike 160 degrees
Dip Steep

Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 130-160 degrees Dip 090 degrees Spacing 0.5 to 1.5 m (up to 5.0 m) avg. 1 m
B) Strike 060 degrees Dip 090 degrees Spacing 0.5 to 1.0 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Local irregular gneissic banding (mm to cm scale), rare felsic stringers ($\leq$1 cm wide), rare mm scale quartz veining.

POSSIBLE USES Landscaping stone, ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This grey granodiorite is slightly coarser than other sample sites in the Elzevir batholith. This site also exhibits lower joint frequency. There is irregular gneissic banding with the rare granitic stringers and quartz veins.

Photo B34. Note granitic stringers (left of pen) and gneissic banding (right of pen). 86-ELZ-009

EMPEY GRANITE

LOCATION Lot 21, Concession 3, Madoc Township (northwest quadrant of Madoc Township)

NTS 31 C/12 **OGS** Map 2154 Geological Report 73

SAMPLE SITE 86-MAD-001

DESCRIPTION OF AREA
The Empey Granite was described by Hewitt (1968, p.15):

"A small area of coarse-grained pink granite outcrops on lot 21, concession III, Madoc township, near Empey. The granite is composed of interlocking grains of quartz, oligoclase, and microcline microperthite, and minor accessory fluorite, magnetite, muscovite, and biotite. The granite may be related in age to the Deloro pluton."

Intense, irregular jointing was observed at the sample site.

CONCLUSIONS
The Empey granite, although texturally uniform, has little potential as a source of building stone due to intense jointing.

POTENTIAL

POOR	MODERATE	GOOD
86-MAD-001		

REFERENCE

Hewitt, D.F. 1968. Geology of Madoc Township and the north part of Huntingdon Township; Ontario Department of Mines, Geological Report 73, 45p.

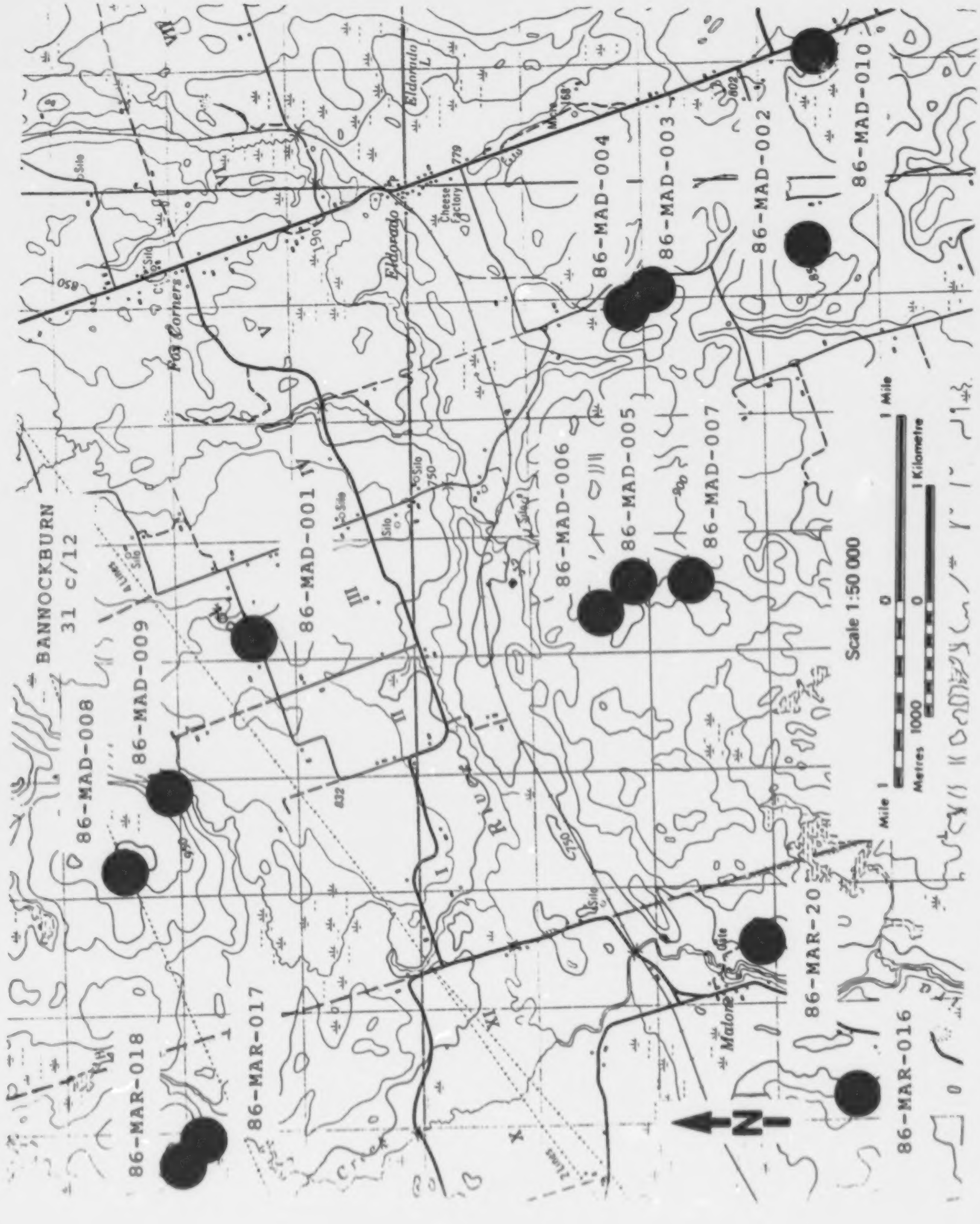
BANNOCKBURN
31 C/12
86-MAD-008
86-MAD-009
86-MAD-001
86-MAD-006
86-MAD-005
86-MAD-007
86-MAD-004
86-MAD-003
86-MAD-002
86-MAD-010
86-MAR-018
86-MAR-017
86-MAR-20
86-MAR-016
Fox Corners
Eldorado
Eldorado L
Cheese Factory
Malone
Creek
N
Scale 1:50 000
Mile
1 Mile
Metres
1000
1 Kilometre

Figure B16. Sample locations, Empey granite.

86-MAD-001

PROPERTY NO. 86-MAD-001

PLUTON NAME Empey Granite

PROPERTY NAME Roadside

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz Syenite

TOWNSHIP Madoc

LOT 21 CONC. 3

NTS 31 C/12 UTM CO-ORDINATES Easting 296200 Northing 49415350

PROPERTY STATUS Prospect

AIR PHOTO NO. 78-4442-142-69

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type Roadcut

COLOUR Fresh Surface Dark pink
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium to coarse Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, plagioclase quartz, minor magnetite, green mineral (alteration of feldspar)

DELETERIOUS MINERALS Yes X No Type Percent 3%

OTHER FEATURES

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a medium- to coarse-grained quartz syenite. The feldspars show evidence of alteration to an indeterminate green mineral. This outcrop has a consistent texture (i.e., few veins or blemishes), however, the secondary alteration and jointing limit the building stone potential of the rock. The use of explosives restricts joint interpretation.

CENTIMETRE
INCH

Photo B35. Close-up showing coarse-grained nature of the granite. 86-MAD-001

GAWLEY CREEK SYENITE

LOCATION Northwest portion of Madoc Township and northeast portion of Marmora Township

NTS 31 C/12 OGS Map 2154 Geological Report 73

SAMPLE SITES 86-MAR-017, 86-MAR-018, 86-MAD-008, 86-MAD-009

DESCRIPTION OF AREA
Hewitt (1968, p.14-15) described the Gawley Creek Syenite as follows:

"The Gawley Creek syenite occupies the northwestern part of Madoc township. The syenite pluton is about 4 miles long in a north-south direction and 4 miles wide in an east-west direction. It extends into Marmora township. Most of the pluton is composed of coarse-grained pink biotite-hornblende syenite similar to the Mount Moriah syenite of Grimsthorpe township. Thin section examination indicates that the syenite is composed predominantly of microcline microperthite and cryptoperthitic oligoclase in large irregular sutured grains. Hornblende and biotite are varietal accessories. Minor accessories include sphene, opaques, apatite, and epidote. Some oligoclase is present in several slides. The eastern end of the syenite pluton in the vicinity of the Bannockburn gold mine is dark-grey coarse-grained biotite syenodiorite that is composed of large crystals of oligoclase with biotite as a varietal accessory. Minor constituents include magnetite, pyrite, apatite, titanite, zoisite, and calcite."

The Gawley Creek syenite contains surprisingly few inclusions, veins, joint fillings or other irregularities. The distribution of minerals is consistent giving the rock a very uniform colour. It was also noted that the colour near the core of the pluton was much better than that of the marginal areas. Grain size is medium and uniform. Jointing tends to be irregular and intense throughout most of the area, however, moderate jointing does occurs locally.

CONCLUSIONS
The intensity and irregularity of the jointing limit the potential for large quarry blocks. Chlorite alteration was also observed near the margins of this syenite. These factors detract from the building stone potential at this site.

POTENTIAL

POOR	MODERATE	GOOD
86-MAR-017		
86-MAR-018		
86-MAD-008		
86-MAD-009		

REFERENCE
Hewitt, D.F. 1968. Geology of Madoc Township and the north part of Huntingdon Township; Ontario Department of Mines, Geological Report 73, 45p.

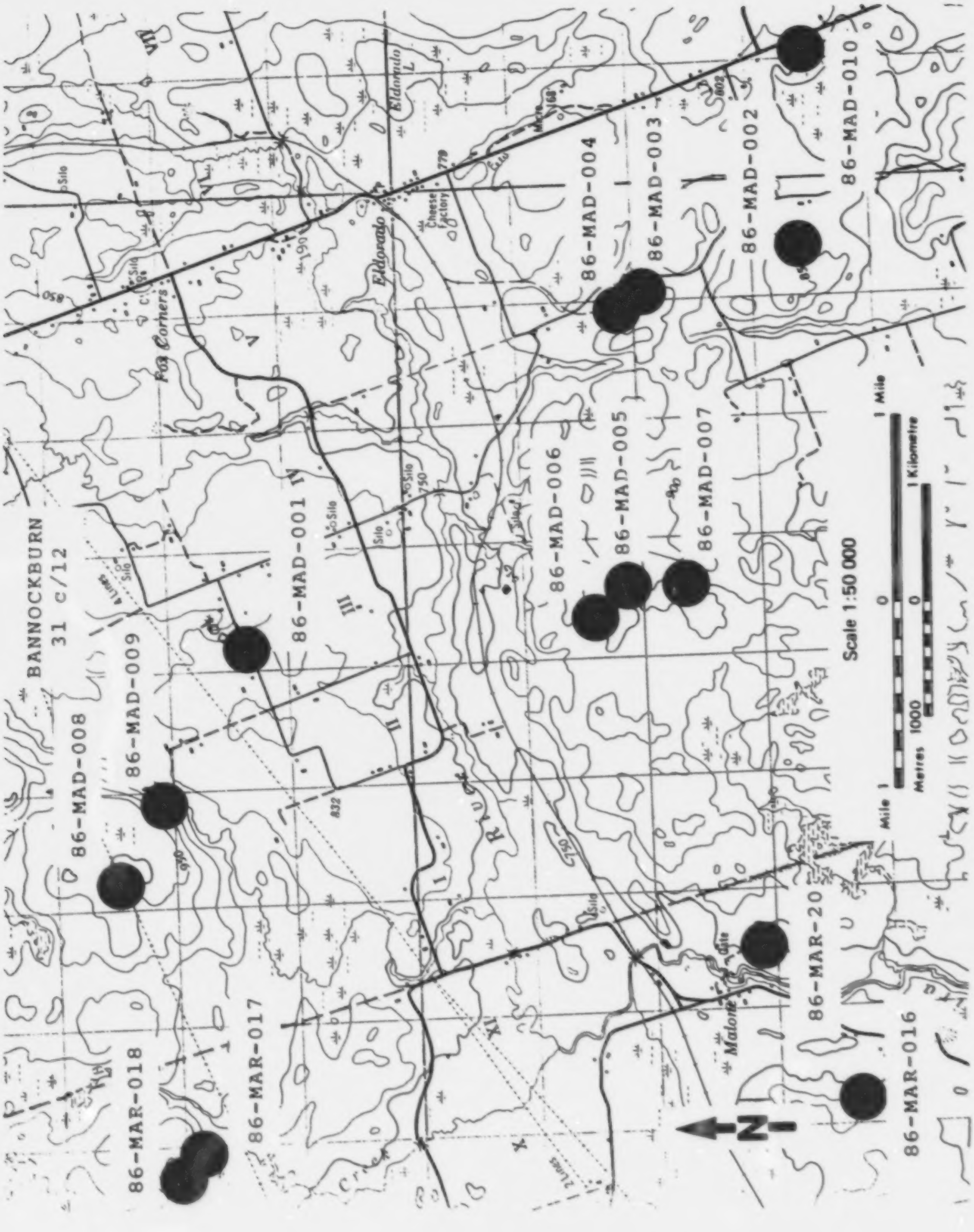
BANNOCKBURN
31 C/12
86-MAD-001
86-MAD-002
86-MAD-003
86-MAD-004
86-MAD-005
86-MAD-006
86-MAD-007
86-MAD-008
86-MAD-009
86-MAD-010
86-MAR-016
86-MAR-017
86-MAR-018
86-MAR-20
Eldorado
Eldorado L
Fox Corners
Malone
Cheese Factory
Silo
Creek
River
N
Scale 1:50 000
Mile
Kilometre
Metres
1000
0

Figure B17. Sample locations, Gawley Creek syenite.

86-MAR-017

PROPERTY NO. 86-MAR-017 PLUTON NAME Gawley Creek Syenite

PROPERTY NAME Gawley Ck-1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Marmora LOT 25 CONC. 10

NTS 31 C/12 UTM CO-ORDINATES Easting 291900 Northing 4941900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4442-142-63

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Bleached pink to black
Uniform Variable X

WEATHERING DEPTH 1 to 1.5 cm

Slightly
GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz (chlorite)

DELETERIOUS MINERALS Yes X No Type Chlorite, sulphides Percent <5%

OTHER FEATURES Zones with coarse mineral grains, hematite staining.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a reddish-brown, massive syenite. The grain size is variable at the outcrop scale and the presence of hematite staining creates some variation in colour. The mafics show signs of chloritization. These factors, coupled with the intense irregular jointing limit building stone potential for this site.

86-MAR-018

PROPERTY NO. 86-MAR-018 **PLUTON NAME** Gawley Creek Syenite

PROPERTY NAME Gawley Ck-2 **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Marmora **LOT** 25 **CONC.** 10

NTS 31 C/12 **UTM CO-ORDINATES** Easting 291700 Northing 4942000

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4442-142-63

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Pink to grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, amphibole (chlorite), (quartz), (magnetite)

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Good benching visible.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a reddish-brown, medium-grained syenite. Chloritized amphiboles, poor outcrop exposure, and moderate, irregular jointing limit the the potential for building stone development.

86-MAD-008

PROPERTY NO. 86-MAD-008
PLUTON NAME Gawley Creek Syenite

PROPERTY NAME Hunt Camp Bluff
COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Madoc
LOT 25
CONC. 1

NTS 31 C/12
UTM CO-ORDINATES Easting 294200 Northing 4942500

PROPERTY STATUS Prospect
AIR PHOTO NO. 78-4442-142-62-65

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Mottled bleached pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium grained Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X

A)	Strike	Dip	Spacing
B)	Strike	Dip	Spacing
C)	Strike	Dip	Spacing
D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, magnetite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare hematite staining.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This is a pinkish-brown, medium-grained, massive syenite. The chlorite alteration observed near the margins of the Gawley Creek Syenite is not present at this site. Hence, this rock has a fresher appearance. The primary deleterious feature is the moderate to intense irregular jointing. Hematite staining was also observed.

86-MAD-009

PROPERTY NO. 86-MAD-009 PLUTON NAME Gawley Creek Syenite

PROPERTY NAME Cliff Face COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Madoc LOT 24 CONC. 2

NTS 31C/12 UTM CO-ORDINATES Easting 294900 Northing 4942100

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4442-142-66

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 1 to 2 cm - extensive in places

GRAIN SIZE Medium to coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, amphibole, biotite, plagioclase, ± quartz

DELETERIOUS MINERALS Yes X No Type Sulphides Percent <1%

OTHER FEATURES Rock locally hosts vugs lined with biotite.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This outcrop of Gawley Creek Syenite is on a very steep slope which makes it difficult to evaluate. It is intensely jointed and is deeply weathered in places. This outcrop shows little potential for large quarry block extraction.

GLANMIRE COMPLEX

LOCATION Northwest corner of Tudor Township, and west of Glanmire Lake

NTS 31 C/13 **OGS** Map 2168 Geological Report 67

SAMPLE SITES 86-TUD-009, 86-TUD-010, 86-TUD-011, 86-TUD-012

DESCRIPTION OF AREA

The Glanmire complex appears similar to the Beaver Creek in both character and potential for building stone. Rock types observed include mafic and felsic intrusive rocks or hybrids that are locally sheared, brecciated or contain metasedimentary inclusions. According to Lumbers (1969), the intrusion is comprised mostly of sodic granitic to syenitic rocks. Lumbers has also mapped a narrow, marginal (west side, southern half) mass of potassic granitic/syenitic affinity with the most abundant unit being quartz monzonite.

Like the Beaver Creek, the Glanmire complex exhibits poor exposure and other deleterious features such as variable lithology, inclusions and brecciation (almost the whole of the southern plug is shown as brecciated).
The quartz monzonite mass may contain some significant exposure at its southern end (access via Glanmire Lake Road). Rounded, white plagioclase "phenocrysts" 1 cm in size were noted and when cut and polished this may produce an attractive result.

CONCLUSIONS

Overall, the Glanmire complex does not warrant any follow-up (excepting rounded "phenocrysts" if considered desirable). Building stone potential is very limited. Ashlar, paving stone and rubble are the only uses that may be applicable.

POTENTIAL

POOR	MODERATE	GOOD
86-TUD-009		
86-TUD-010		
86-TUD-011		
86-TUD-012		

REFERENCE

Lumbers, S.B. 1969. Geology of Limerick and Tudor townships, Hastings County, Ontario; Ontario Department of Mines, Geological Report 67, 110p.

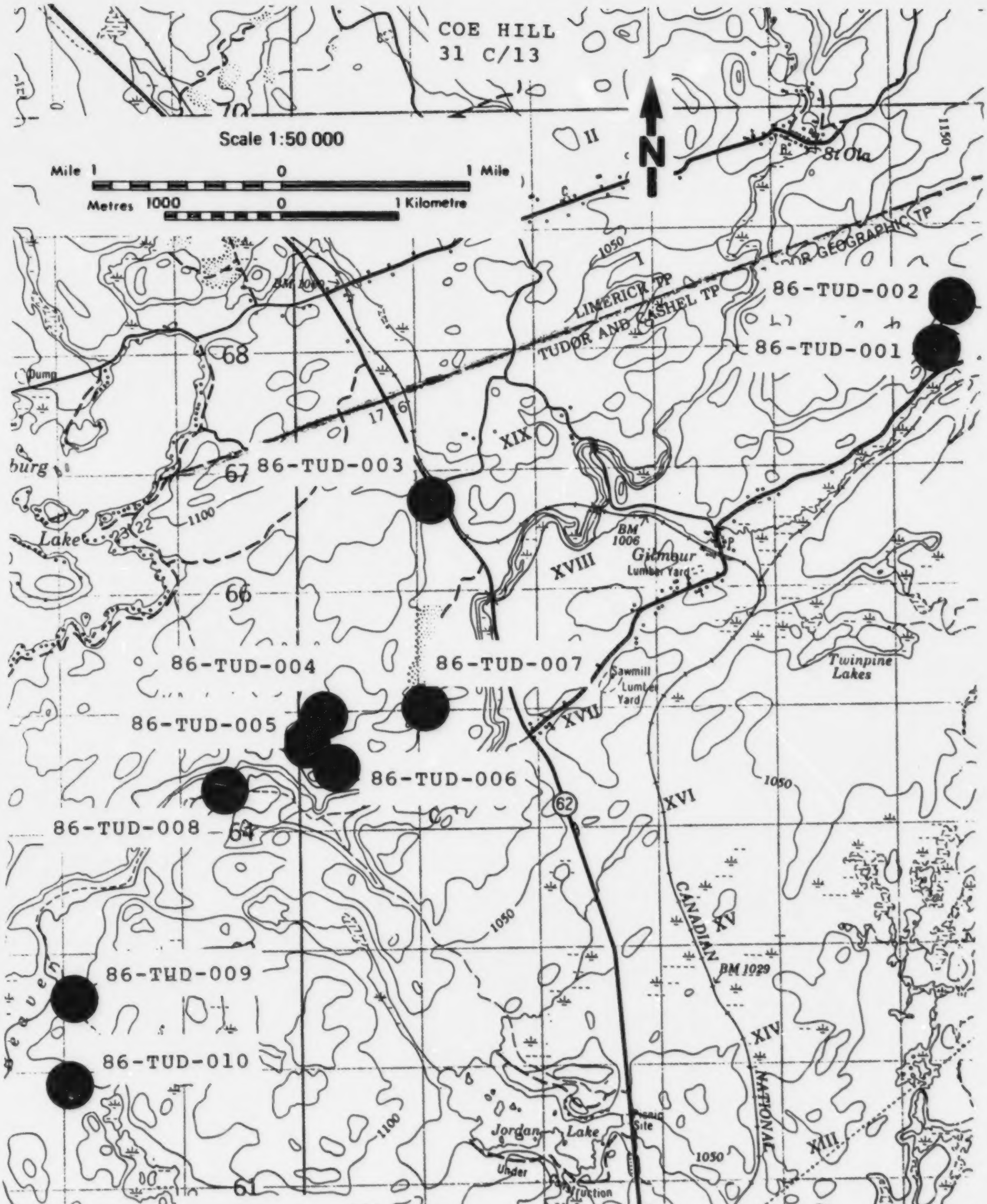
COE HILL
31 C/13
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
St Ola
LIMERICK TP
TUDOR AND CASHEL TP
TUDOR GEOGRAPHIC TP
86-TUD-002
86-TUD-001
86-TUD-003
86-TUD-004
86-TUD-005
86-TUD-006
86-TUD-007
86-TUD-008
86-TUD-009
86-TUD-010
86-TUD-011
86-TUD-012
Gilmour
Lumber Yard
Sawmill
Lumber Yard
Twinpine Lakes
CANADIAN NATIONAL
Jordan Lake
Glanmire Lake
Beaven
Lake
Dump
Gate
Under Construction
BM 1049
BM 1006
BM 1029
1050
1100
1150
62
XIX
XVIII
XVII
XVI
XV
XIV
XIII
XII
II
70
68
67
66
64
61

Figure B18. Sample locations, Glanmire complex.

86-TUD-009

PROPERTY NO. 86-TUD-009

PLUTON NAME Glanmire Complex

PROPERTY NAME Glanmire-1

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Tudor

LOT 27 **CONC.** 16

NTS 31 C/13 **UTM CO-ORDINATES** Easting 288100 Northing 4962600

PROPERTY STATUS Prospect **AIR PHOTO NO.** 69-4433-2-64

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Buff to grey to grey-green
Weathered Surface Bleached grey
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium to fine Uniform Variable X

TEXTURE Massive Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 175 degrees Dip 75 degrees W Spacing 1 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz

DELETERIOUS MINERALS Yes X No Type Disseminated sulphides Percent 1%

OTHER FEATURES Up to 1 cm rusty vugs (Fe carbonate); altered feldspar, locally schistose, chlorite-rich metavolcanic inclusions (10 m long outcrop).

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This is a medium- to fine-grained granitic rock. It is generally massive but is schistose in places. The feldspar component has been sericitized locally. The rock contains mafic inclusions and Fe-carbonate filled vugs. Jointing is intensive and outcrop exposure is poor.

86-TUD-010

PROPERTY NO. 86-TUD-010 PLUTON NAME Glanmire Complex

PROPERTY NAME Glanmire-2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Tudor LOT 28 CONC. 15

NTS 31 C/13 UTM CO-ORDINATES Easting 288050 Northing 4961850

PROPERTY STATUS Prospect AIR PHOTO NO. 69-4433-2-64

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey green
Weathered Surface Whitish grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium-coarse Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar quartz, indeterminant mafic minerals; Mafic content: approx. 5 to 15%

DELETERIOUS MINERALS Yes X No Type Disseminated sulphides Percent <1%

OTHER FEATURES Chlorite and carbonate-coated joints; rusty fractures - occasionally vuggy; 0.5 m wide quartz vein containing sulphides observed, hematite staining.

POSSIBLE USES Crushed stone

OUTCROP EXPOSURE Good Fair X Poor X

COMMENTS This is a massive, medium-grained, grey-green granitic rock. The feldspar component has been sericitized. Sulphides and magnetite are disseminated throughout the rock and the mafic mineralogy was indeterminant in hand sample. The rock has a mottled rusty appearance in places from sulphide alteration and joint planes were observed to be chlorite and carbonate coated. Jointing occurs in an intense irregular pattern.

86-TUD-011

PROPERTY NO. 86-TUD-011 PLUTON NAME Glanmire Complex

PROPERTY NAME Glanmire-3 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Tudor LOT 27 CONC. 14

NTS 31 C/13 UTM CO-ORDINATES Easting 288850 Northing 4960350

PROPERTY STATUS Prospect AIR PHOTO NO. 69-4432-6-275

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Bleached grey-white
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium to rarely coarse Uniform X Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing Inadequate Exposure
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES 0.5 cm aplite stringers; feldspar megacrysts (to 1 cm in length), feldspar alteration

POSSIBLE USES Ashlar, paving stone, rubble

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a massive pink granite which contains a few megacrysts (up to 1 cm in length). The feldspar component has been sericitized to some degree; a phenomenon observed at other sample sites on the Glanmire Complex. The mafic component of this rock is minor (<3% approximately). Poor outcrop exposure limits joint interpretation. The jointing observed occurred in an irregular pattern. Aplite stringers were also observed in this rock.

86-TUD-012

PROPERTY NO. 86-TUD-012 PLUTON NAME Glanmire Complex

PROPERTY NAME Glanmire-4 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Tudor LOT 26 CONC. 13

NTS 31 C/13 UTM CO-ORDINATES Easting 289300 Northing 4960150

PROPERTY STATUS Prospect AIR PHOTO NO. 69-4432-6-275

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Bleached pink-grey
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium (rarely coarse) Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing Inadequate Exposure
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite, magnetite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Up to 10 to 20 cm wide quartz segregations. Rare rusty vugs, local quartz veining.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS Poor exposure (2 to 3 m^2) along edge of low ridge. Inadequate for proper assessment. Low development potential due to abundance of cottages and prominantly posted private land.

LANARK-OSO MAFIC INTRUSION

LOCATION Extends from the east side of Sharbot Lake in southern Oso Township through the northern part of South Sherbrooke Township

NTS 31 C/15 OGS Map 2471 Report 228

SAMPLE SITES 86-OSO-001, 86-OSO-002, 86-OSO-003, 86-OSO-008, 86-SSHER-001

DESCRIPTION OF AREA

The Lanark-Oso mafic intrusion outcrops along a northeast trend parallel to the foliation of the enclosing high-grade gneiss. It was described by Wolff (1985, p.34) as "a well-differentiated mafic intrusion containing pyroxenite-peridotite, gabbro, anorthositic gabbro to gabbroic anorthosite, and anorthositic phases." Wolff also stated that only the contacts have been metamorphosed, with little recrystallization evident within the anorthositic phases.

The rock at all sample sites is anorthosite. Deleterious features observed include quartz and granitic stringers, exfoliation, and intense jointing.

CONCLUSIONS

Based on the sample sites examined, the intrusion appears to have little potential for building stone. However, because the rock is described by Wolff as having a generally fresh appearance, further investigation is warranted in the central parts of the intrusion.

POTENTIAL

POOR	MODERATE	GOOD
86-OSO-001		
86-OSO-002		
86-OSO-003		
86-OSO-008		
86-SSHER-001		

REFERENCE

Wolff, J.M. 1985. Geology of the Sharbot Lake area, Frontenac and Lanark counties, southeastern Ontario; Ontario Geological Survey, Report 228, 70p.

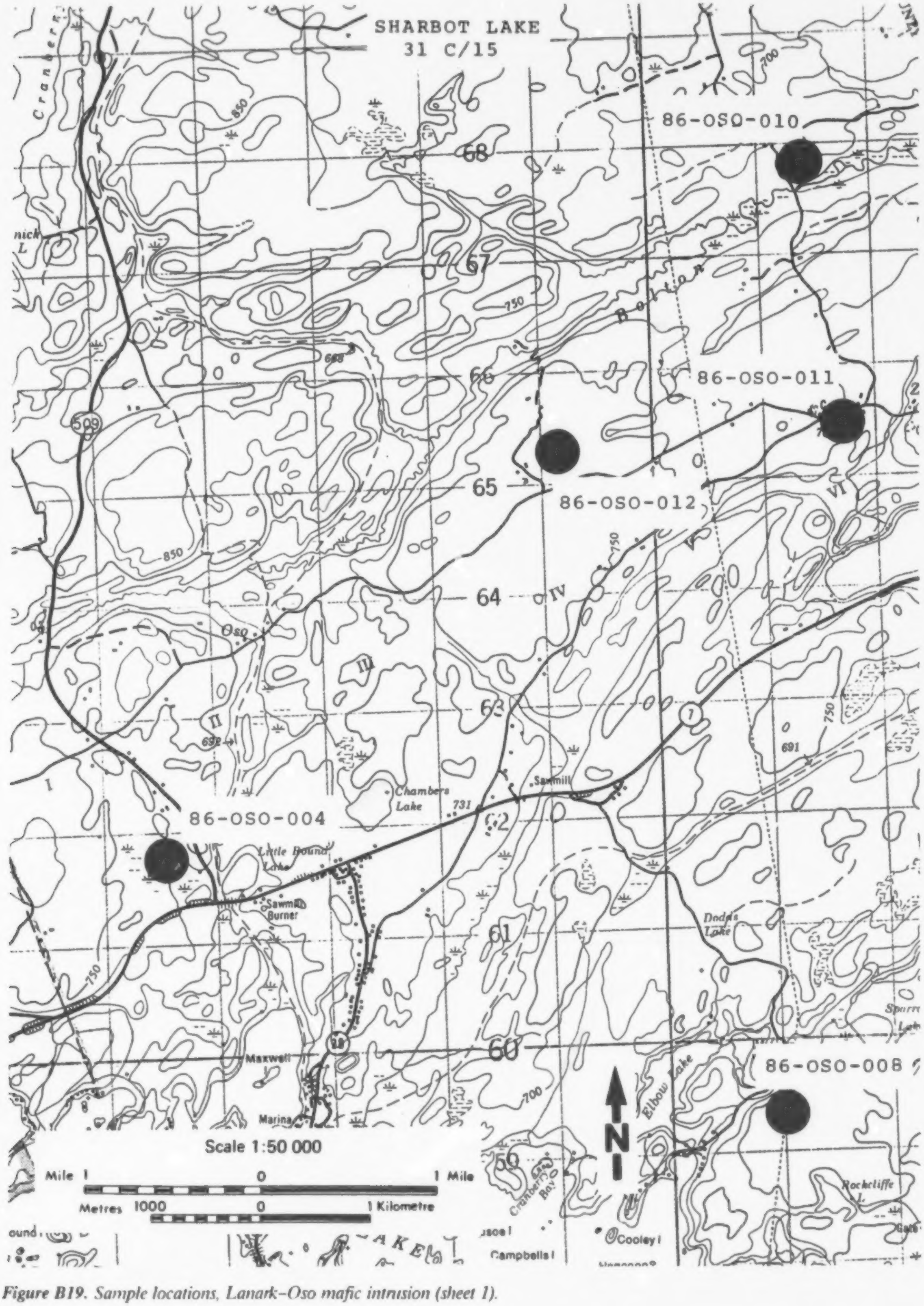
SHARBOT LAKE
31 C/15
86-OSO-010
86-OSO-011
86-OSO-012
86-OSO-004
86-OSO-008
68
67
66
65
64
63
62
61
60
59
850
750
700
668
691
692
731
509
7
38
Oso
Chambers Lake
Little Round Lake
Sawmill
Sawmill Burner
Dodds Lake
Elbow Lake
Maxwell
Marina
Cranberry Bay
Cooley I
Campbells I
Rockcliffe L.
Bolton
I
II
III
IV
V
VI
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B19. Sample locations, Lanark–Oso mafic intrusion (sheet 1).

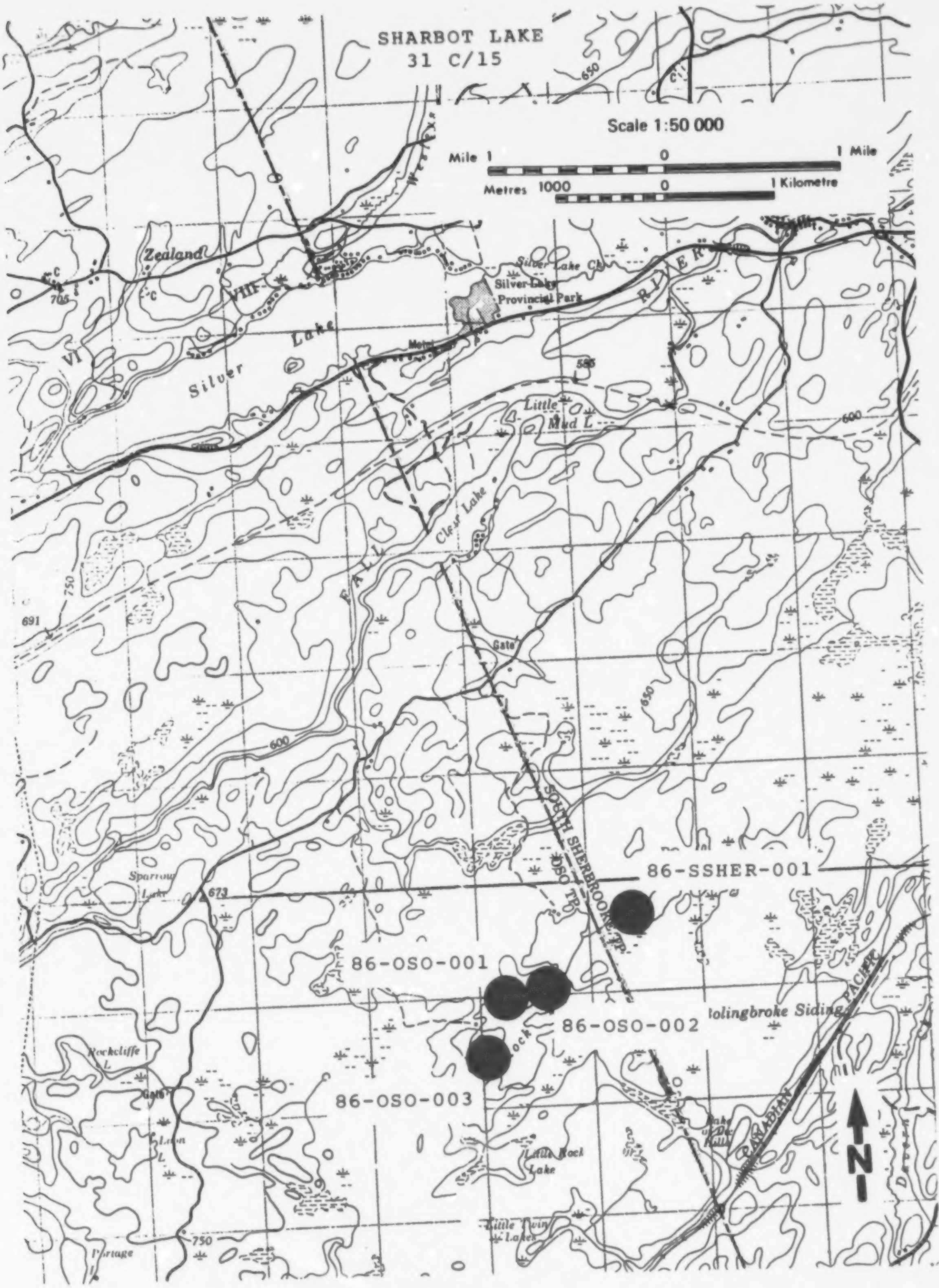
SHARBOT LAKE
31 C/15
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Zealand
VIII
VI
Silver Lake
Silver Lake Ck
Silver Lake Provincial Park
RIVER
Little Mud L.
Clear Lake
FALL
Gate
SOUTH SHERBROOKE TP.
OSO TP.
Sparrow Lake
86-SSHER-001
86-OSO-001
86-OSO-002
86-OSO-003
Bolingbroke Siding
Rockcliffe L.
Little Rock Lake
Little Twin Lakes
Portage
CANADIAN PACIFIC
N
705
691
750
673
650
600
585

Figure B20. Sample locations, Lanark–Oso mafic intrusion (sheet 2).

86-OSO-001

PROPERTY NO. 86-OSO-001 PLUTON NAME Lanark-Oso Mafic Intrusion

PROPERTY NAME Marshall Cottage COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Oso LOT 8 CONC. 7

NTS 31 C/15 UTM CO-ORDINATES Easting 375300 Northing 4959000

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4454-163-225

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Violet-black
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, pyroxene, (corundum)

DELETERIOUS MINERALS Yes X No Type Percent

OTHER FEATURES Coarse corundum and pyroxene crystals, granitic stringers.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, violet-black anorthosite with coarse corundum and pyroxene crystals. It is cut by numerous quartz stringers and has intense irregular jointing. These factors limit the building stone potential of the area.

86-OSO-002

PROPERTY NO. 86-OSO-002 **PLUTON NAME** Lanark-Oso Mafic Intrusion

PROPERTY NAME Marshall #2 **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Oso **LOT** 8 **CONC.** 7

NTS 31 C/15 **UTM CO-ORDINATES** Easting 375550 Northing 4959050

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4454-163-225

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Violet-black
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, pyroxene, corundum

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Granitic stringers, some exfoliation

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This outcrop is a medium-grained, black anorthosite which contains coarse corundum and diopside crystals. As was observed at other sites of the Lanark-Oso mafic intrusion, this rock contains intense irregular jointing and numerous quartz stringers. Hence, building stone potential is limited.

86-OSO-003

PROPERTY NO. 86-OSO-003 PLUTON NAME Lanark-Oso Mafic Intrusion

PROPERTY NAME Rock Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Oso LOT 7 CONC. 7

NTS 31 C/15 UTM CO-ORDINATES Easting 374950 Northing 4958450

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4454-163-225

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey-blue
Weathered Surface Grey
Uniform Variable X

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase feldspar, quartz

DELETERIOUS MINERALS Yes X No Type Sulphides Percent <1%

OTHER FEATURES Quartz stringers, sheeting (intense), coarse corundum, crystals.

POSSIBLE USES Small ornamental objects, ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a grey blue, massive anorthosite. It is very competent and has many marketable characteristics. The objectionable features include intense irregular jointing, quartz stringers and rare coarse corundum crystals. These features diminish the building stone potential of this area.

86-OSO-008

PROPERTY NO. 86-OSO-008 PLUTON NAME Lanark-Oso Mafic Intrusion

PROPERTY NAME McGees Pond COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Oso LOT 11 CONC. 4

NTS 31 C/15 UTM CO-ORDINATES Easting 371000 Northing 4959350

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4454-163-216

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brownish black
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, quartz, corundum pyroxene

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Numerous quartz stringers, veins, and localized exfoliation.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This black anorthosite has many appealing features, however, it also contains numerous quartz veins and stringers and intense irregular jointing. These factors decrease the potential of building stone development in this area.

Photo B36. Overall view of outcrop showing extensive jointing and fair outcrop exposure. 86-OSO-008

86-SSHER-001

PROPERTY NO. 86-SSHER-001 **PLUTON NAME** Lanark-Oso Mafic Intrusion

PROPERTY NAME Deer Lake Inlet **COMMERCIAL STONE NAME** Anorthosite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP South Sherbrooke **LOT** 5 **CONC.** 6

NTS 31 C/15 **UTM CO-ORDINATES** Easting 376350 Northing 4959700

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4458-184-180

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Bluish grey
Weathered Surface Grey to black
Uniform X Variable

WEATHERING DEPTH Negligible

Corundum phenocryst

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive (to weakly foliated) Uniform Variable

FABRIC Yes No. Weak X Mod. Strong Strike 142 degrees Dip
Formed By Elongation plus alignment of mafic inclusions

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
Especially exfoliation

A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins, felsic pods, veins are both planar and sinuous, mafic inclusions, coarse corundum crystals, exfoliation intense.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This is a dark bluish-grey anorthosite of the Lanark-Oso mafic intrusion. It is medium grained, generally massive, and contains mafic inclusions which appear to have a parallel alignment. Coarse corundum crystals are common. Jointing occurs in an intense irregular manner and numerous quartz stringers and veins are present within this cliff-like outcrop.

LAVANT MAFIC INTRUSION

LOCATION The intrusion extends from northern Oso Township through parts of Palmerston, North Sherbrooke, Dalhousie and Lavant townships

NTS 31 C/15, 31 F/2 OGS Map 2471 Report 228

SAMPLE SITES 86-OSO-005, 86-OSO-006, 86-OSO-007, 86-LAV-001

DESCRIPTION OF AREA

The Lavant intrusion is described by Wolff (1985, p.34) as "basically a gabbro body which contains fine-grained gabbro phases, felsic late-stage intrusives, and no anorthosite." Sample sites 86-OSO-005, 006, and 007 from the southern end of the intrusion show intense, irregular jointing and other deleterious features such as quartz pods, biotite-rich zones, pyrite, hematite staining, and felsic dikes. Site 86-LAV-001, in the northern part of the intrusion, shows similar jointing and pyrite content.

CONCLUSIONS

Although only the northern and southern limits of this large intrusion were examined, results indicate a low potential for building stone in the Lavant gabbro.

POTENTIAL

POOR	MODERATE	GOOD
86-OSO-005		
86-OSO-006		
86-OSO-007		
86-LAV-001		

REFERENCE

Wolff, J.M. 1985. Geology of the Sharbot Lake area, Frontenac and Lanark counties, southeastern Ontario; Ontario Geological Survey, Report 228, 70p.

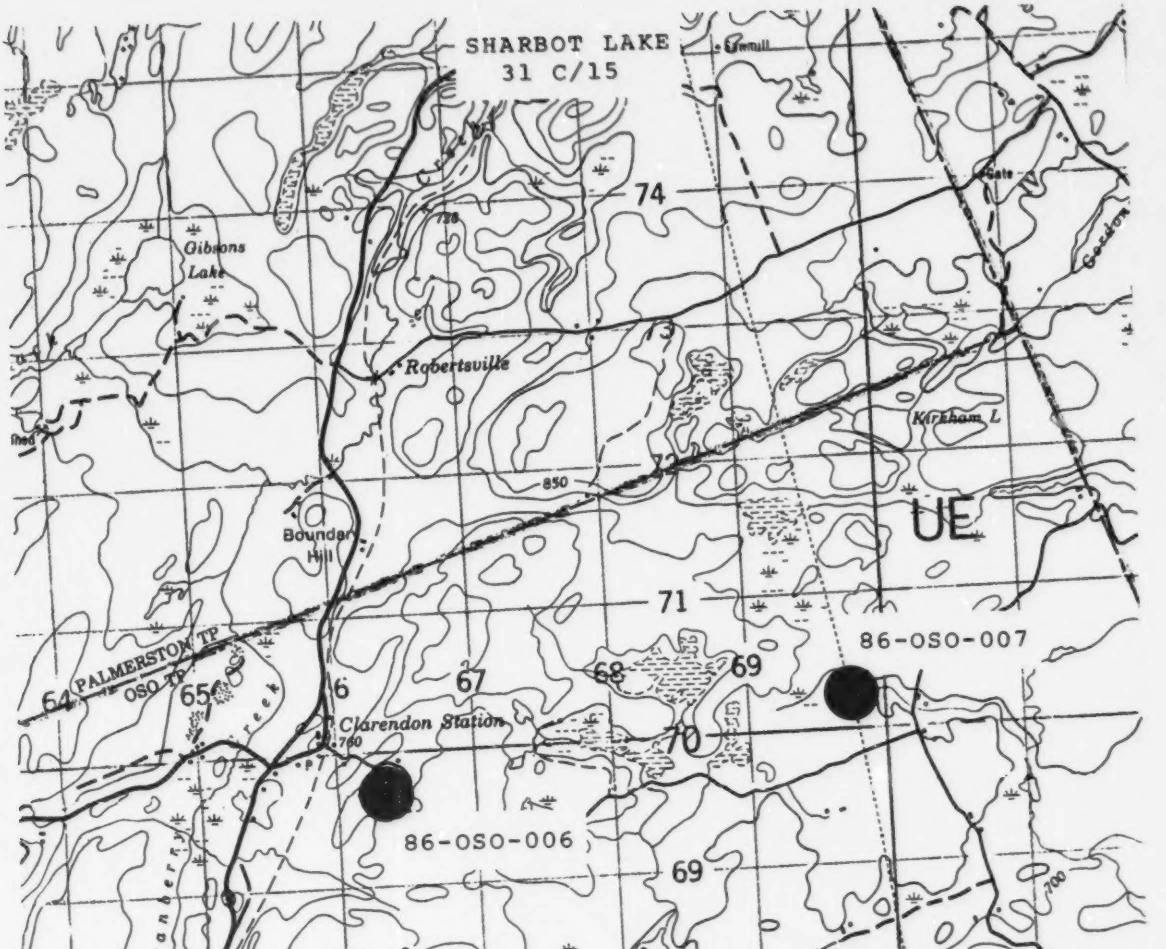
SHARBOT LAKE
31 C/15
Gibsons Lake
Robertsville
Kirkham L
Bounder Hill
PALMERSTON TP
OSO TP
Clarendon Station
UE
86-OSO-007
86-OSO-006
86-OSO-005
Cranberry Creek
Pennick L
Bolton
509
74
71
67
68
69
70
64
65
850
750
700
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B21. Sample locations, Lavant mafic intrusion (sheet 1).

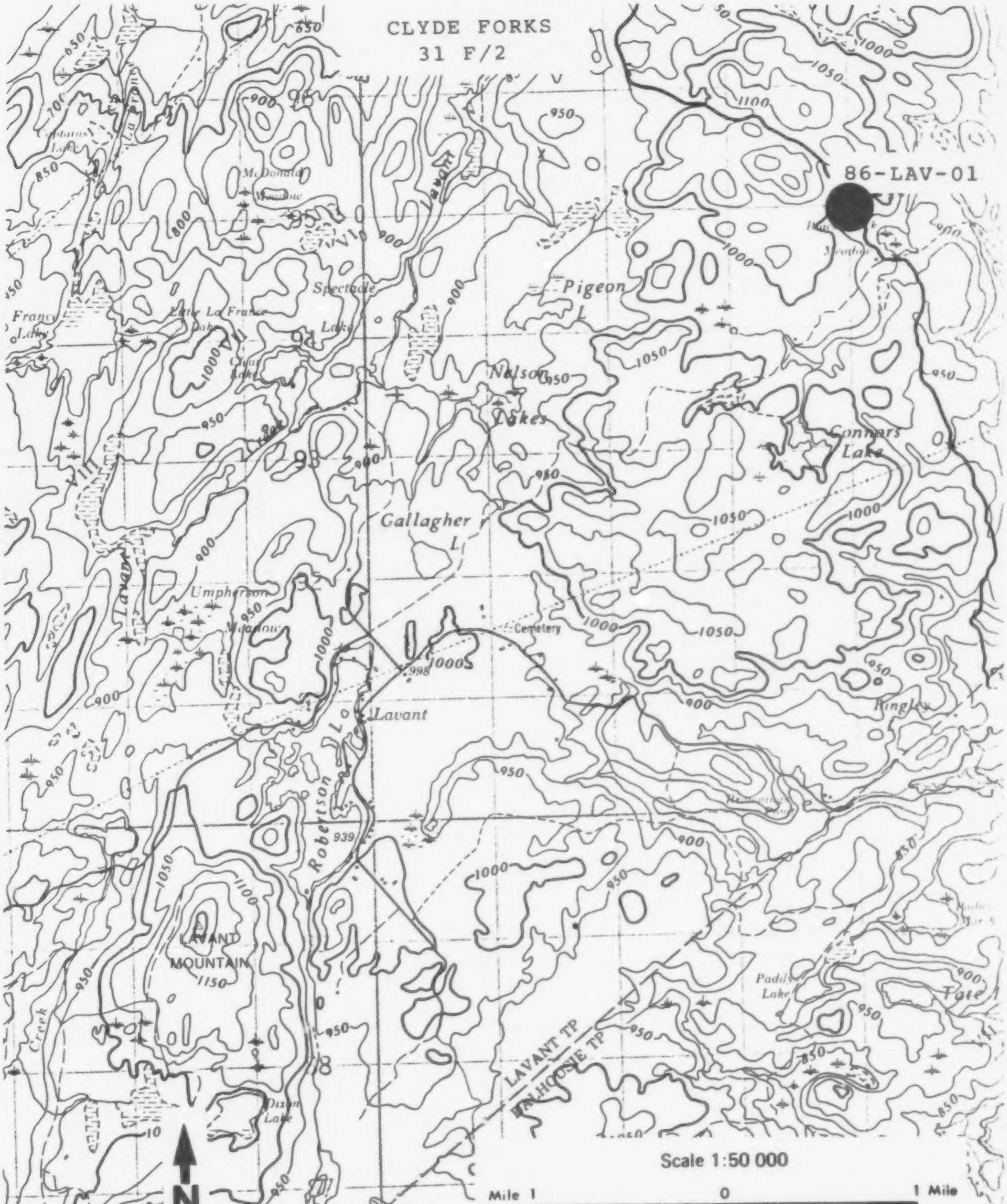
CLYDE FORKS
31 F/2
86-LAV-01
Pigeon L.
Nelson Lakes
Connors Lake
Gallagher L.
Spectacle Lake
McDonald Meadow
Little La France Lake
France Lake
Clear Lake
Umpherson Meadow
Cemetery
Lavant
Robertson L.
LAVANT MOUNTAIN
Creek
Dixon Lake
Caldwell Lake
Paddy Lake
Tate
LAVANT TP
DALHOUSIE TP
Baars Meadow
ELM HILL
Matthie L.
Upper Park Lake
Pond on the Hill
Otter
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B22. Sample location, Lavant mafic intrusion (sheet 2).

86-OSO-005

PROPERTY NO. 86-OSO-005 PLUTON NAME Lavant Mafic Intrusion

PROPERTY NAME Pennick Lake (East of 509) COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Oso LOT 27 CONC. 3

NTS 31 C/15 UTM CO-ORDINATES Easting 365700 Northing 4967070

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4459-90-122

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark grey
Weathered Surface Light grey
Uniform Variable X

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz, corundum

DELETERIOUS MINERALS Yes X No Type Biotite, sulphides Percent >30%

OTHER FEATURES Groupings of quartz crystals, large biotite crystals (up to 2 cm).

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS The Lavant mafic intrusion at this site consists of metasomatically altered gabbro in which the mafic component has been depleted and carbonate and quartz have been added. The rock colour is inconsistent at the hand sample scale and the presence of sulphides and carbonate make this rock a poor candidate for building stone material.

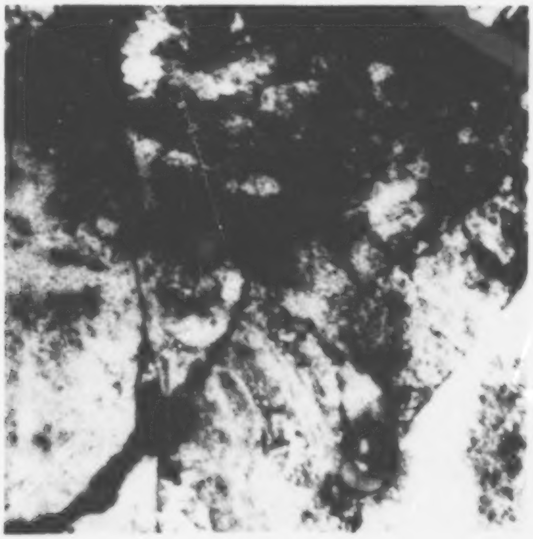

Photo B37. *Outcrop displaying intense vertical and oblique jointing. 86-OSO-005*

86-OSO-006

PROPERTY NO. 86-OSO-006 PLUTON NAME Lavant Mafic Intrusion

PROPERTY NAME Clarendon Station COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Diorite

TOWNSHIP Oso LOT 29 CONC. 4

NTS 31 C/15 UTM CO-ORDINATES Easting 366400 Northing 4969800

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4461-186-201

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey (light)
Weathered Surface Dark grey
Uniform X Variable

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium to coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 120 degrees Dip 80 degrees Spacing 0.5 to 2 m
B) Strike 80 degrees Dip Spacing 0.5 to 2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, amphibole, (biotite); Mafic content: approx. 50%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins and stringers.

POSSIBLE USES Ashlar and crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This is a competent grey diorite which represents a portion of the Lavant intrusion. This rock has a fresh appearance but exhibits extensive variation in grain size. The building stone potential of this site is further limited by the intense regular and irregular jointing and the presence of quartz veins and stringers.

86-OSO-007

PROPERTY NO. 86-OSO-007 PLUTON NAME Lavant Mafic Intrusion

PROPERTY NAME Clarendon St. N. Hydroline COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Diorite

TOWNSHIP Oso LOT 30 CONC. 6

NTS 31 C/15 UTM CO-ORDINATES Easting 369750 Northing 4970250

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4461-186-203

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Black and white
Weathered Surface Light grey
Uniform X Variable

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Fine Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Amphibole, feldspar

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Hematite coating - felsic dikes and quartz stringers.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a massive, fine-grained diorite. The grain size and texture is consistent. Felsic dikes and quartz stringers were observed. Hematite staining is present along some joint planes. The intense irregular jointing is the primary feature that limits building stone potential.

87-LAV-001

PROPERTY NO. 86-LAV-001 PLUTON NAME Lavant Mafic Intrusions

PROPERTY NAME Black Creek Meadow COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Lavant LOT 6 CONC. 4

NTS 31 F/2 UTM CO-ORDINATES Easting 374000 Northing 4995050

PROPERTY STATUS Roadcut AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High Velocity

COLOUR Fresh Surface Violet tinted black
Weathered Surface Dull Grey
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Fine to coarse Uniform Variable X

TEXTURE Porphyritic Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 125 degrees Dip 10 degrees NW Spacing 1 m
B) Strike Horizontal Dip 10 degrees E Spacing 0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Pyroxene, plagioclase

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Numerous stringers, pyroxene, phenocrysts.

POSSIBLE USES Ornamental stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This black granite shows little or no potential for building stone due to extensive vertical and horizontal jointing and fine stringers and disseminations of pyrite. The groundmass appears to be almost entirely plagioclase, which surrounds phenocrysts of pyroxene. The rock is not very aesthetically appealing.

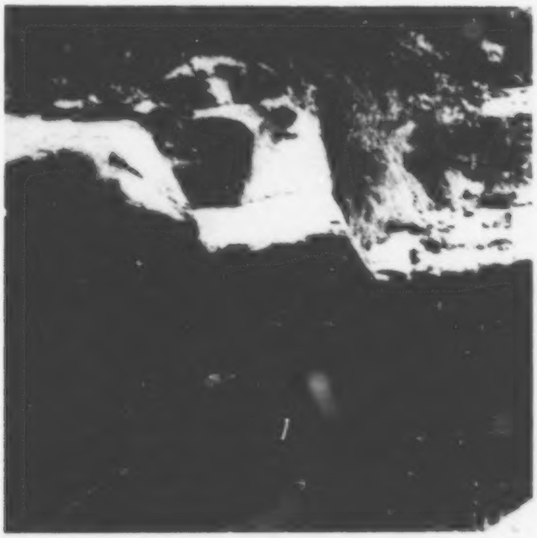

***Photo B38.** View of outcrop showing both vertical and horizontal jointing. Some weathered quartz veins are also visible at top of outcrop. 86-LAV-001*

LEGGAT LAKE GRANITE

LOCATION Southeastern Olden Township, between O'Reilly Lake and Long Lake

NTS 31 C/10 OGS Maps 2449, 2053 Report 216

SAMPLE SITES 86-OLD-005, 86-OLD-006, 86-OLD-010, 86-OLD-011, 86-OLD-012, 86-OLD-013, 86-OLD-014

DESCRIPTION OF AREA

The Leggat Lake granite is described by Wolff (1982) as a dominantly quartz monzonite body which is compositionally and structurally related to the McLean granitic pluton located west of Long Lake.

The sample sites represent a north-south section across the western part of the intrusion. All sites except 86-OLD-005 and 006 show irregular, intense jointing and other deleterious features such as quartz pods, pyrite, hematite, and pegmatite dikes. Sites 86-OLD-005 and 006 at the southern margin of the intrusion show moderate jointing, but also contain quartz veins, pegmatite and hematite.

CONCLUSIONS

In general, the building stone potential is poor, but jointing in the southern part of the granite intrusion may allow the extraction of small quarry blocks.

POTENTIAL

POOR		MODERATE		GOOD
	86-OLD-005			
86-OLD-006				
86-OLD-010				
86-OLD-011				
86-OLD-012				
86-OLD-013				
86-OLD-014				

REFERENCE

Wolff, J.M. 1982. Geology of the Long Lake area; Ontario Geological Survey, Report 216, 76p.

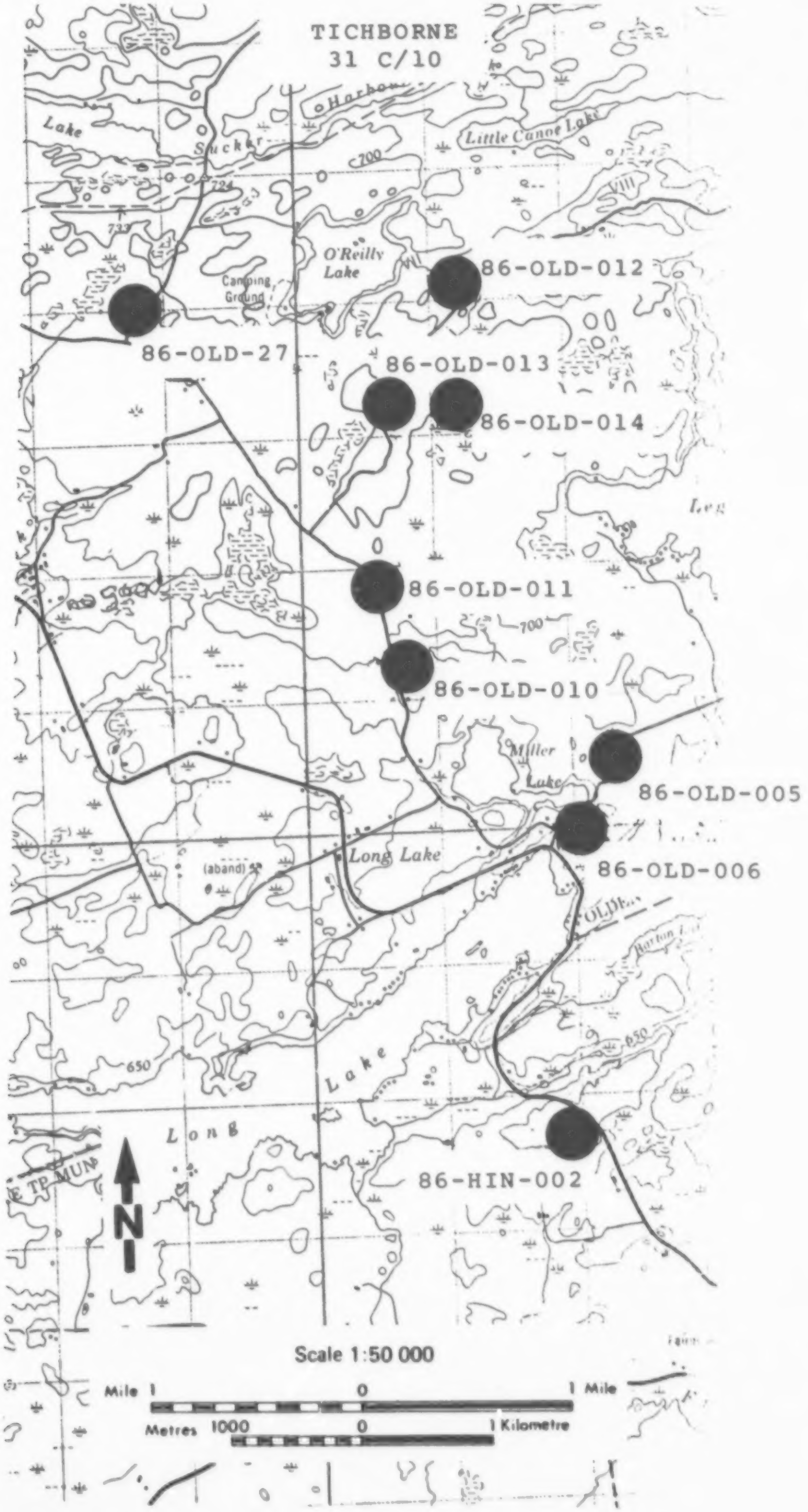
TICHBORNE
31 C/10
Lake
Sucker
Little Canoe Lake
O'Reilly Lake
Camping Ground
86-OLD-012
86-OLD-27
86-OLD-013
86-OLD-014
86-OLD-011
86-OLD-010
Miller Lake
86-OLD-005
86-OLD-006
Long Lake
(aband)
Long Lake
86-HIN-002
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B23. Sample locations, Leggat Lake granite.

86-OLD-005

PROPERTY NO. 86-OLD-005 PLUTON NAME Leggat Lake Granite

PROPERTY NAME Miller Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 2 CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 362300 Northing 4950500

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4449-129-46

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink with grey
Uniform X Variable

WEATHERING DEPTH 1 to 3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 120 degrees Dip 50 degrees N Spacing 2 m
B) Strike 0 degrees Dip vertical Spacing 0.5 to 3 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor to fair

MINERALOGY Feldspar, biotite, quartz Mafic content: approx. 10%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Sheeting (0.2 to 1 m), hematite staining, quartz veins (to 4 cm in width), granitic stringers.

POSSIBLE USES Small building blocks (crushed stone, ashlar)

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This sample is a massive, medium-grained, pink granite. The biotite tends to occur in small knots (to 1 cm) but generally the texture and colour are consistent. Jointing occurs in regular and irregular patterns with moderate intensity. Sheeting tends to be more intense (average 0.5 m). Quartz veins, felsic stringers and minor hematite staining are also present in this rock.

86-OLD-006

PROPERTY NO. 86-OLD-006 PLUTON NAME Leggat Lake Granite

PROPERTY NAME Abbott Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Monzonite

TOWNSHIP Olden LOT 1 (NW), 2 (SW) CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 362000 Northing 4950000

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-128-60

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Fine to medium Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 0 degrees Dip vertical Spacing 3 m
B) Strike 80 degrees Dip vertical Spacing 3 m
C) Strike 170 degrees Dip vertical Spacing 2 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins, pegmatite dikes, sheeting (0.5 m), minor mafic alteration.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a massive, pink monzonite. The grain size varies from fine to medium grained, even at the hand specimen size. The mafic component is somewhat altered. Jointing occurs in moderate intensity in both regular and irregular patterns. Quartz veins and pegmatite dikes were also observed in the area.

86-OLD-010

PROPERTY NO. 86-OLD-010 PLUTON NAME Leggat Lake Granite

PROPERTY NAME Long Lake North COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 4 midnorth CONC. 6

NTS 31 C/10 UTM CO-ORDINATES Easting 360800 Northing 4951200

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4449-129-44

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 120 degrees Dip vertical Spacing 0.1 to 1 m
B) Strike 10 degrees Dip vertical Spacing 0.1 to 2 m
C) Strike Horizontal Dip Spacing 0.5 to 1 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz pods rare, biotite alteration, hematite staining, minor exfoliation.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a dull pink, medium-grained, massive granite. Colour, grain size and texture are uniform throughout the rock. The biotite component shows signs of alteration. Jointing occurs in both regular and irregular patterns with very close spacing. Further deleterious factors include hematite staining, rare quartz pods and exfoliation. These factors limit building stone potential.

86-OLD-011

PROPERTY NO. 86-OLD-011 PLUTON NAME Leggat Lake Granite

PROPERTY NAME Miller Lake Northwest COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Olden LOT 5 CONC. 6

NTS 31 C/10 UTM CO-ORDINATES Easting 360600 Northing 4951850

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4449-129-44

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 126 degrees Dip 90 degrees Spacing 0.1 to 1 m
B) Strike 40 degrees Dip 90 degrees Spacing 0.1 to 0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz; Mafic content: approx. 15%

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Pegmatite, quartz stringer, aplite pod, hematite staining.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This sample is a medium-grained, massive, pinkish-red, quartz monzonite. The primary factor which would tend to diminish building stone potential is the intense irregular and regular joint patterns. Other deleterious features include the presence of pyrite, hematite staining, and felsic stringers and veins.

Photo B39. Close-up of medium grain size and massive texture. 86-OLD-011

86-OLD-012

PROPERTY NO. 86-OLD-012 PLUTON NAME Leggat Lake Granite

PROPERTY NAME O'Reilly Lake East COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Quartz Monzonite

TOWNSHIP Olden LOT 8, 9 CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 361200 Northing 4954050

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4451-143-114

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark pink (dull)
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes No. Weak X Mod. Strong Strike Dip
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 10 degrees Dip 37 degrees NW Spacing 0.1 to 2 m
B) Strike 125 degrees Dip vertical Spacing 0.5 to 0.5 m
C) Strike 40 degrees Dip 58 degrees SE Spacing 10 m
D) Strike Subhorizontal Dip Spacing 0.5 m

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite (quartz); Mafic content: approx. 10 to 15%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare pegmatite dikes, rare hematite staining.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Rare pegmatite dikes and hematite staining were observed, but these are not serious defects. Intense jointing is the principle factor that limits the building stone potential for this area.

Photo B40. Note intensive, regular and irregular jointing. 86-OLD-012

86-OLD-013

PROPERTY NO. 86-OLD-013 PLUTON NAME Leggat Lake Granite

PROPERTY NAME O'Reilly Lake South COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Monzonite

TOWNSHIP Olden LOT 7 (W 1/2) CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 360700 Northing 4953200

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450-131-47

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink-red
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH ≤3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive to slightly foliated Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike Dip
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 140 degrees Dip 90 degrees Spacing ≤2 m
B) Strike 50 degrees Dip 90 degrees Spacing 1 to 3 m
C) Strike 100 degrees Dip Spacing 0.1 to 1 m
D) Strike Horizontal Dip Spacing 0.5 m

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite (quartz)

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Sheeting, quartz stringers (rare)

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a pink-red, medium-grained monzonite. It is weakly foliated in places but is generally massive. Jointing follows regular patterns but is intensive (particularly the horizontal sheeting). Quartz stringers were also observed. This area has limited building stone potential despite the fact that exposure is good and deleterious minerals were not present.

Photo B41. Pink monzonite depicting intensive jointing and good exposure. 86-OLD-013

86-OLD-014

PROPERTY NO. 86-OLD-014 PLUTON NAME Leggat Lake Granite

PROPERTY NAME 1 km west of Leggat Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Olden LOT 7 mid-south CONC. 7

NTS 31 C/10 UTM CO-ORDINATES Easting 361200 Northing 4953250

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450 131-47

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish red
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 to 3 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 30 degrees Dip vertical Spacing 0.1 to 0.5 m
B) Strike 0 degrees Dip vertical Spacing 0.1 to 0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite; Mafic content: approx. 10%

DELETERIOUS MINERALS Yes X No Type Specularite Percent Trace

OTHER FEATURES Quartz veins, pegmatite dikes, specularite staining, biotite alteration, exfoliation.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This sample is a medium-grained, massive, quartz monzonite from the Mountain Grove felsic intrusion. As seen at other sites in this intrusion, intense irregular jointing is the primary feature which limits building stone development. Other deleterious features include quartz and pegmatite veins, hematite staining, biotite alteration, exfoliation and poor outcrop exposure.

MALONE PLUTON

LOCATION Eastern Marmora Township between the villages of Malone and Deloro

NTS 31 C/12 OGS Map P.2613 OFR 5537

SAMPLE SITE 86-MAR-016

DESCRIPTION OF AREA
Bartlett and Moore (1985, p.75) described the Malone pluton as follows:

"The Malone Pluton consists mainly of very fine-grained, porphyritic alkali-feldspar granite, with phenocrysts generally 0.5-1 mm across, of anhedral quartz and subhedral plagioclase and microcline and/or orthoclase and/or perthite. This pluton may be a high level satellite of the Deloro Granite."

The sample site shows intense, irregular jointing, highly variable texture and colour, quartz pods, iron staining and amphibolite dikes.

CONCLUSIONS
The Malone Pluton has low potential as a building stone prospect.

POTENTIAL		
POOR	MODERATE	POOR
86-MAR-016		

REFERENCE

Bartlett, J.R. and Moore, J.M. Jr. 1985. Geology of Belmont, Marmora, and Southern Methuen townships, Peterborough and Hastings counties; Ontario Geological Survey, Open File Report 5537, 236p.

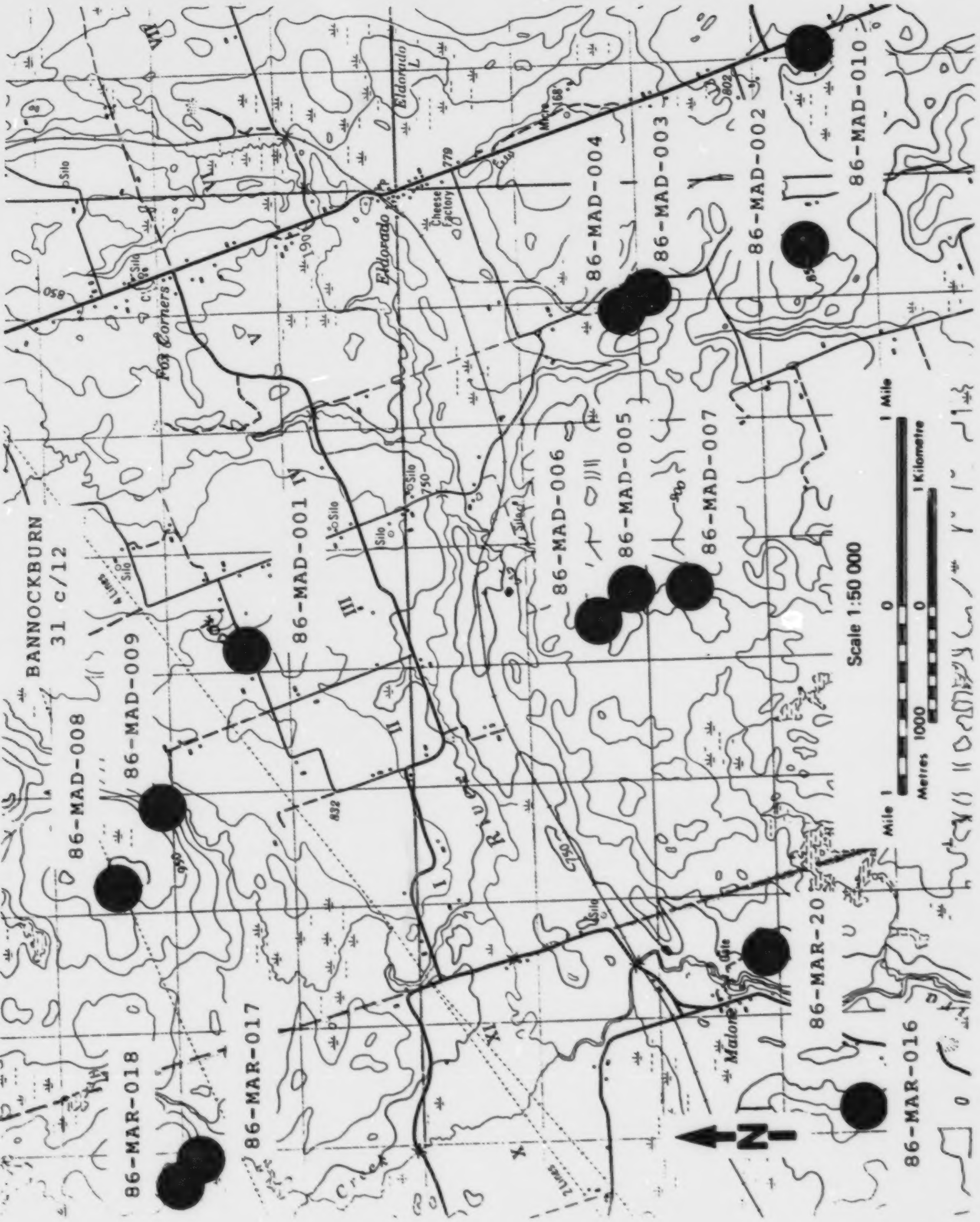
BANNOCKBURN
31 C/12
86-MAD-008
86-MAD-009
86-MAD-001
86-MAD-006
86-MAD-005
86-MAD-007
86-MAD-004
86-MAD-003
86-MAD-002
86-MAD-010
86-MAR-018
86-MAR-017
86-MAR-20
86-MAR-016
Fox Corners
Eldorado
Eldorado L.
Cheese Factory
Malone
Silo
N
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre

Figure B24. Sample locations, Malone pluton.

86-MAR-016

PROPERTY NO. 86-MAR-016 PLUTON NAME Malone Pluton

PROPERTY NAME Malone Pluton COMMERCIAL STONE NAME Fine-grained granite

GEOLOGICAL ROCK NAME Microgranite

TOWNSHIP Marmora LOT 16 CONC. 10

NTS 31 C/12 UTM CO-ORDINATES Easting 292200 Northing 493637

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4439-132-71

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Extremely variable - pale pink to dark pink
Weathered Surface Extremely variable - pink to black
Uniform Variable X

WEATHERING DEPTH

GRAIN SIZE Fine to medium Uniform Variable X

TEXTURE Porphyritic to foliated Uniform Variable X

FABRIC Yes X No. Weak X Mod. to Strong X Strike Dip
Formed By Alignment of phenocrysts

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, epidote (phenocrysts)

DELETERIOUS MINERALS Yes X No Type Green mineral-possibly epidote in porphyry Percent 10%

OTHER FEATURES Specularite staining, quartz pods, amphibolite dike

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The Malone pluton contains rocks which are highly variable in mineralogy and texture. Numerous factors make this property a poor building stone prospect. These include inconsistent mineralogy and texture, quartz pods, specularite staining and the presence of an amphibolite dike. The intense irregular jointing is the major shortcoming with respect to building stone development in this area.

MCLEAN GRANITIC PLUTON

LOCATION Southeast corner of Kennebec Township, southwest corner of Olden Township, northern Hinchinbrooke Township

NTS 31 C/10 OGS Map 2449 Report 216

SAMPLE SITES 86-OLD-015, 86-OLD-016, 86-OLD-017, 86-OLD-018, 86-OLD-019, 86-OLD-020, 86-OLD-021, 86-OLD-022, 86-HIN-002, 86-KEN-011, 86-KEN-012

DESCRIPTION OF AREA

The McLean granitic pluton is an area composed mainly of granite, quartz monzonite, trondhjemite and granodiorite. Due to poor access most samples were taken from outcrops along the side of the road from the village of McLean to Watson Lake. This area is only a very small part of the pluton and should be investigated further, especially to the west (closer to the core of the pluton).

Jointing is generally regular to irregular and intense although areas of moderate jointing occur toward the centre of the pluton. Grain size is dominantly medium, grading to coarse toward the core and the texture is massive. The rocks are composed of quartz, plagioclase (probably andesine), orthoclase, microcline and biotite. The only deleterious mineral noticed in the area was specularite.

Deleterious features locally include quartz veins and pods, aplite pods, rare pegmatites, mafic inclusions near the periphery and minor exfoliation. It is important to note that the severity of these features definitely decreases toward the core.

CONCLUSIONS

The most significant potential for building stone occurs near the centre of the pluton and should be further investigated. Areas toward the periphery tend to have many mafic or metavolcanic inclusions and show very little potential for building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-OLD-015	86-OLD-020	
86-OLD-016	86-OLD-022	
86-OLD-017		
86-OLD-018		
86-OLD-019		
86-OLD-021		
86-HIN-002		
86-KEN-011		
86-KEN-012		

REFERENCES

Harding, W.D. 1951. Geology of the Olden-Bedford area, Frontenac County, Ontario; Ontario Department of Mines, Annual Report, 1947, v.56, pt.6.

Wolff, J.M. 1982. Geology of the Long Lake area; Ontario Geological Survey, Report 216, 76p.

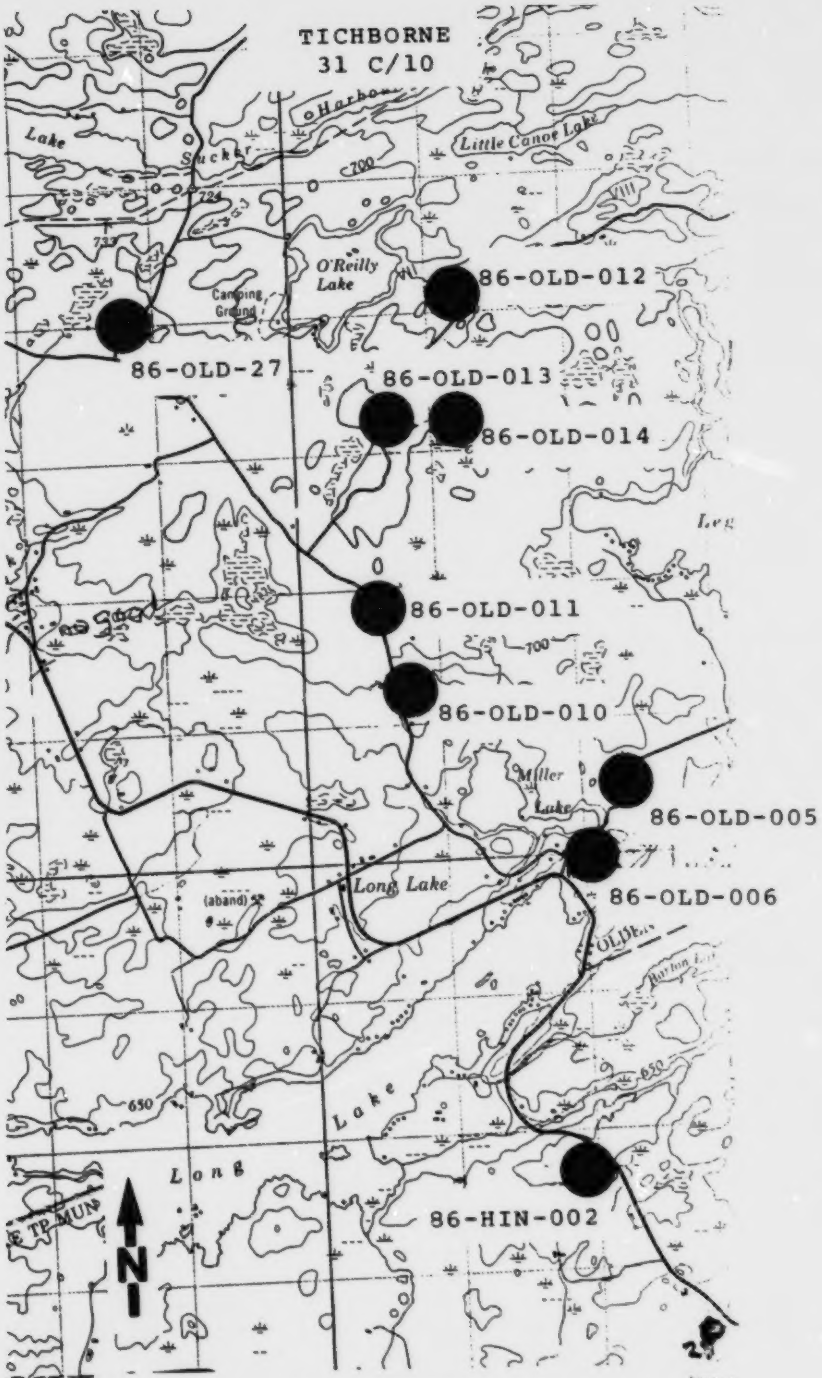
TICHBORNE
31 C/10
Harbour
Little Canoe Lake
Lake
Sucker
O'Reilly Lake
Camping Ground
86-OLD-012
86-OLD-27
86-OLD-013
86-OLD-014
86-OLD-011
86-OLD-010
Miller Lake
86-OLD-005
86-OLD-006
Long Lake
(aband)
Long Lake
650
700
86-HIN-002
TP MUN
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B25. Sample locations, McLean granitic pluton (sheet 1).

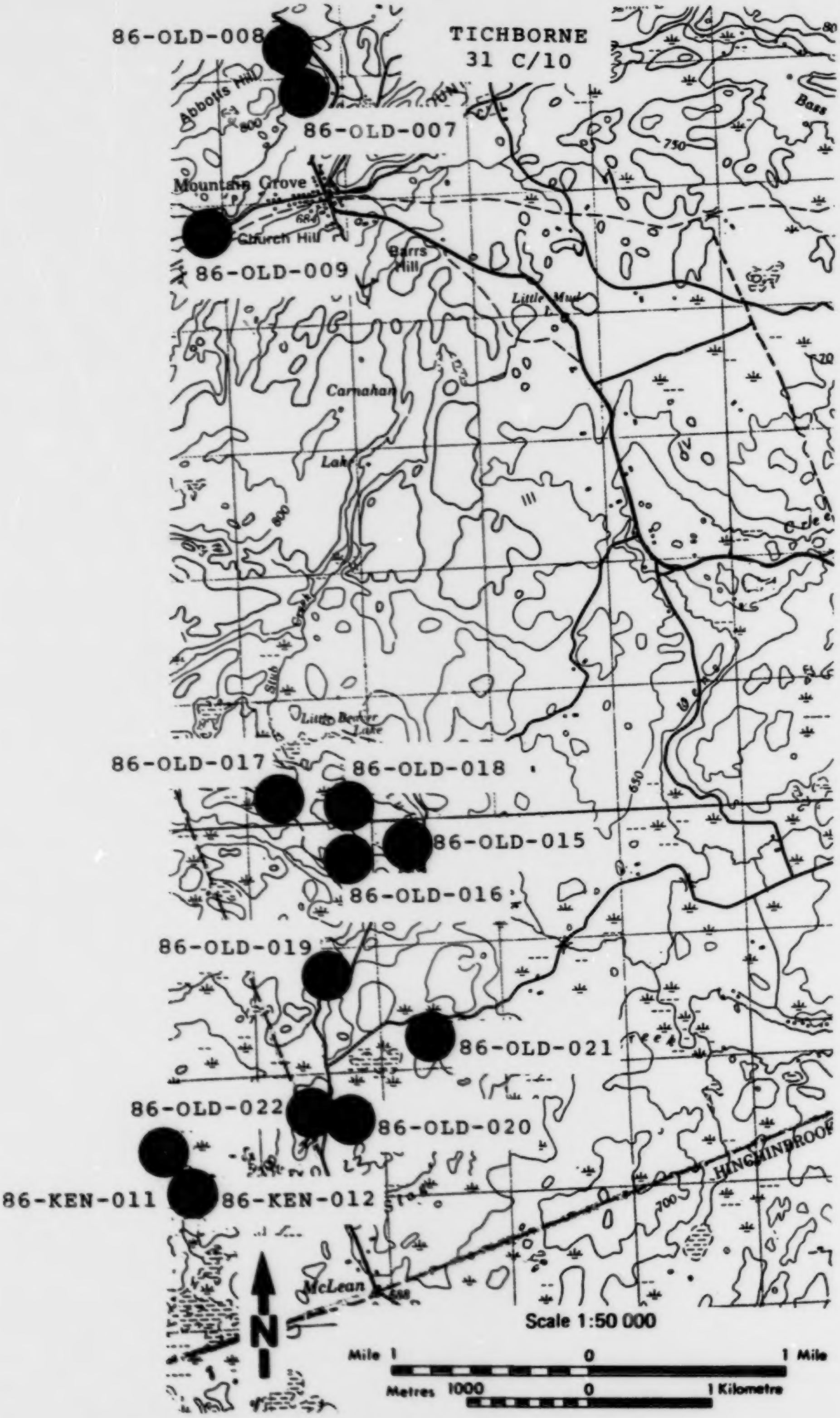
TICHBORNE
31 C/10
86-OLD-008
86-OLD-007
86-OLD-009
Abbotts Hill
Mountain Grove
Church Hill
Barrs Hill
Little Mud L.
Carnahan Lake
Little Beaver Lake
86-OLD-017
86-OLD-018
86-OLD-015
86-OLD-016
86-OLD-019
86-OLD-021
86-OLD-022
86-OLD-020
86-KEN-011
86-KEN-012
HINCHINBROOKE
McLean
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B26. Sample locations, McLean granitic pluton (sheet 2).

86-OLD-015

PROPERTY NO. 86-OLD-015 PLUTON NAME McLean Pluton

PROPERTY NAME Watson Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Olden LOT 6 CONC. 2

NTS 31 C/10 UTM CO-ORDINATES Easting 354250 Northing 4999740

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-128-51

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern (X) Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 52 degrees Dip 76 degrees SE Spacing 0.1 to 2 m
B) Strike Subhorizontal Dip Spacing ≤0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz

DELETERIOUS MINERALS Yes X No Type Specularite Percent Trace

OTHER FEATURES Minor exfoliation, rare mafic inclusions, quartz veins and pods, hematite staining (especially along joint planes).

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a massive, medium-grained, pink quartz monzonite. It has a fresh appearance and is quite competent. Outcrop exposure is good. This rock contains moderate irregular jointing and numerous deleterious features including mafic inclusions, quartz veins and pods, hematite staining and exfoliation. These factors diminish building stone potential.

86-OLD-016

PROPERTY NO. 86-OLD-016 PLUTON NAME McLean Pluton

PROPERTY NAME Little Beaver Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Olden LOT 6 CONC. 1

NTS 31 C/10 UTM CO-ORDINATES Easting 353800 Northing 4949700

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-128-51

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light Pink
Uniform X Variable

WEATHERING DEPTH 1 to 3 mm

GRAIN SIZE Medium (coarse) Uniform Variable X

TEXTURE Prophyritic Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz; Mafic content: approx. 15%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Feldspar, phenocrysts

POSSIBLE USES Ashlar, paving stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This sample is a porphyritic monzonite to quartz monzonite. The porphyritic texture adds to the appearance of the rock. Few deleterious features were observed, however, the area exhibits intense irregular jointing. This rock may have potential for use in a local market.

86-OLD-017

PROPERTY NO. 86-OLD-017 **PLUTON NAME** McLean Pluton

PROPERTY NAME Little Beaver Lake II **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Olden **LOT** 8 **CONC.** 1

NTS 31 C/10 **UTM CO-ORDINATES** Easting 353250 Northing 4950200

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4448-128-51

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite, amphibole (magnetite); Mafic content: approx. 10%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Many metavolcanic inclusions around the area.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This sample is a massive, medium-grained, pinkish-red quartz monzonite. It has a very fresh appearance and contains few deleterious features. (In an area close to this outcrop numerous mafic inclusions were observed.) The principal feature which diminishes building stone potential in this area is the intense irregular jointing.

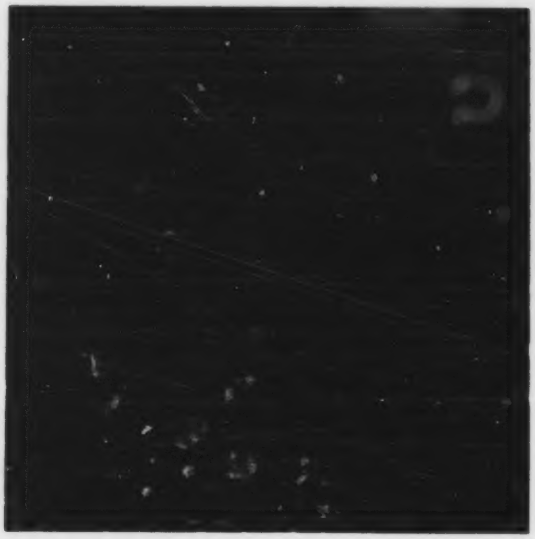

Photo B42. *Hammer head rests on mafic xenolith while handle rests on a more granitic zone. 86-OLD-017*

86-OLD-018

PROPERTY NO. 86-OLD-018 **PLUTON NAME** McLean Pluton

PROPERTY NAME Little Beaver Lake 3 **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden **LOT** 7 **CONC.** 1

NTS 31 C/10 **UTM CO-ORDINATES** Easting 353800 Northing 4950100

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4448-128-51

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink/grey
Uniform X Variable

WEATHERING DEPTH 3 to 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 30 degrees Dip Vertical Spacing 0.1 to 1 m
B) Strike 150 degrees Dip 70 degrees West Spacing 0.1 to 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite (magnetite)

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Granitic stringers, granite/metavolcanic contact approximately 300 m to the west of this site.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a pink, massive, medium-grained granite of the McLean pluton. The rock is competent and has a very fresh appearance. It contains a few quartz stringers and mafic inclusions were observed nearby. The intense jointing diminishes the building stone potential at this site.

86-OLD-019

PROPERTY NO. 86-OLD-019 PLUTON NAME McLean Pluton

PROPERTY NAME Watson Lake-South-West COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 5 CONC. 1

NTS 31 C/10 UTM CO-ORDINATES Easting 353600 Northing 4948750

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-128-51

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Whitish pink
Uniform X Variable

WEATHERING DEPTH 1 mm

GRAIN SIZE Fine to coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 140 degrees Dip 60 degrees SW Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite (magnetite) Mafic content: approx. 8%

DELETERIOUS MINERALS Yes X No Type Hematite staining Percent Trace

OTHER FEATURES Hematite staining, aplite and pegmatite dikes, alteration of mafics.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This is a reddish-pink, massive granite which contains some feldspar phenocrysts. The mafics (and possibly the feldspars) show signs of alteration in hand specimen. The fresh surface of this rock has a granular appearance. Jointing follows regular patterns but the joints are closely spaced and oblique. Other deleterious features include hematite staining (abundant) and pegmatite and aplite dikes.

86-OLD-020

PROPERTY NO. 86-OLD-020 **PLUTON NAME** McLean Pluton

PROPERTY NAME 1.5 km N of McLean **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Olden **LOT** 3 **CONC.** 1

NTS 31 C/10 **UTM CO-ORDINATES** Easting 353850 Northing 4947650

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4447-130-107

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type Roadcut nearby

COLOUR Fresh Surface Pink
Weathered Surface Light pink with grey
Uniform X Variable

WEATHERING DEPTH 2 to 3 mm

GRAIN SIZE Coarse/medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 105 degrees Dip ? Spacing 1 to 3 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Moderate-fair

MINERALOGY Biotite, plagioclase, quartz, K-spar

DELETERIOUS MINERALS Yes X No Type Hematite Percent Trace

OTHER FEATURES Hematite staining, exfoliation.

POSSIBLE USES Small building stone, ashlar, paving stone

OUTCROP EXPOSURE Good X Fair X to Poor

COMMENTS The rock is a very fresh, massive, pink quartz monzonite. The quartz, plagioclase and K-spars all exhibit phenocrysts in uniform concentrations. A small amount of hematite staining was observed on joint faces. This area should further be investigated.

86-OLD-021

PROPERTY NO. 86-OLD-021 **PLUTON NAME** McLean Pluton

PROPERTY NAME Stag Creek **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden **LOT** 3 **CONC.** 2

NTS 31 C/10 **UTM CO-ORDINATES** Easting 354400 Northing 4948250

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4447-130-109

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink-black specks
Weathered Surface Dull Pink
Uniform X Variable

WEATHERING DEPTH $\leq$1 cm

GRAIN SIZE Medium to coarse Uniform Variable X

TEXTURE Massive to foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Alignment of biotite

BEDDING Yes No Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern. X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 80 degrees Dip 90 degrees Spacing 0.3 to 2 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite; Mafic content: approx. 25 to 30%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Aplite dikes, mafic inclusions.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a dark pink granite which has a slightly inconsistent grain size and texture. Aplite dikes and mafic inclusions (max. 15 cm wide) are also present in this rock. Jointing and sheeting is intensive. These factors tend to diminish building stone potential in this area.

86-OLD-022

PROPERTY NO. 86-OLD-022 PLUTON NAME McLean Pluton

PROPERTY NAME Road Side COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 3 CONC. 1

NTS 31 C/10 UTM CO-ORDINATES Easting 353450 Northing 4947650

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4446-119-103

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Light pink
Uniform Variable X

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Slightly foliated to gneissic Uniform Variable X

FABRIC Yes X No. Weak X to Mod. Strong X Strike Dip
Formed By Alignment of biotite, gneissic banding

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, biotite, quartz

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Rare aplite dikes (to 10 cm wide), poor horizontal exposure, veins of more siliceous material present (to 0.5 m wide), large outcrop area, exfoliation on the 10 cm to 0.5 m scale.

POSSIBLE USES Small building stone, ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This site has a large outcrop exposure and moderate vertical jointing. However, numerous veins (aplite, quartz rich and coarse felsic) at various attitudes, exfoliation, and texture which varies from weakly foliated to gneissic at the outcrop scale limit the building stone potential of this site.

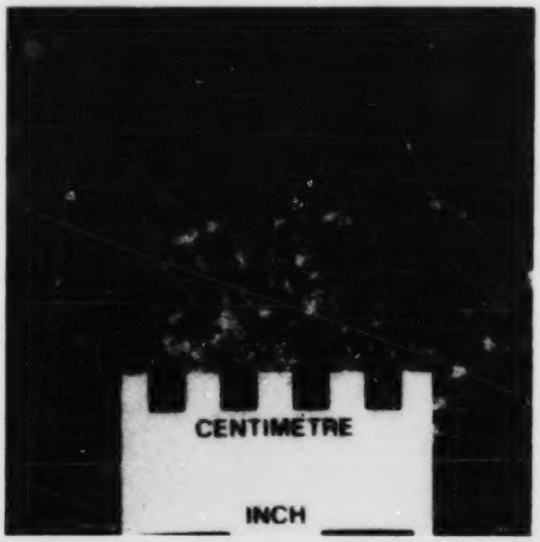
CENTIMETRE
INCH

Photo B43. Close-up view of fresh surface showing grain size. 86-OLD-022

86-HIN-002

PROPERTY NO. 86-HIN-002 **PLUTON NAME** McLean Pluton

PROPERTY NAME Long Lake **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Quartz monzonite

TOWNSHIP Hinchinbrooke **LOT** 28 **CONC.** 4

NTS 31 C/10 **UTM CO-ORDINATES** Easting 361900 Northing 4947750

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4447 130-1177

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink and Grey
Uniform Variable X

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 70 degrees Dip
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 160 degrees Dip Spacing 2 to 3 m
B) Strike 20 degrees Dip Spacing 2 to 3 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Large aplite dikes (to 3 m wide), quartz veins.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This is a medium-grained, moderately foliated, pink quartz monzonite. This site is near the eastern perimeter of the McLean pluton. Jointing here is intense and occurs in regular and irregular joint patterns. Quartz veins and aplite dikes were also observed in the area. Outcrop exposure is extensive.

86-KEN-011

PROPERTY NO. 86-KEN-011 PLUTON NAME McLean Pluton

PROPERTY NAME McLean - Kennebec Twp. #1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Kennebec LOT 3 CONC. 10

NTS 31 C/10 UTM CO-ORDINATES Easting 352050 Northing 4947400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4446-119-102

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brownish pink
Weathered Surface Bleached pink to grey
Uniform Variable X

WEATHERING DEPTH

GRAIN SIZE Medium to coarse Uniform Variable X

TEXTURE Massive to porphyritic Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite (amphibole)

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Rare pegmatite dikes, rare pegmatite pods, areas of coarse grained granite relatively common.

POSSIBLE USES Crushed stone

OUTCROP EXPOSURE Good X to Fair X Poor

COMMENTS This site is fairly typical of outcrop mineralogy, texture, and jointing near the core of the McLean pluton. The outcrop exposure at this site is good and it is easily accessible. The major deleterious features of this rock are the variable grain size and irregular jointing. Vertical jointing is not predominant, however, horizontal exfoliation is present on the 5 to 10 cm scale. The grain size was found to be quite variable even at the hand speciman scale.

86-KEN-012

PROPERTY NO. 86-KEN-012 PLUTON NAME McLean Pluton

PROPERTY NAME Beaver Pond COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Kennebec LOT 2 CONC. 10

NTS 31 C/10 UTM CO-ORDINATES Easting 352400 Northing 4947100

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4447-130-107

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink to black
Uniform Variable X

WEATHERING DEPTH 3 to 4 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, biotite, quartz, plagioclase

DELETERIOUS MINERALS Yes X No Type Biotite in clumps Percent Rare

OTHER FEATURES Mafic-rich areas (clumps of biotite crystals)

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a massive, medium-grained, pink granite. The grain size is more consistent than at sites closer to the intrusion centre and pegmatite phases were not observed. However, the rock at this site contains knots of biotite crystals (maximum observed were 4 cm in diameter). The jointing is not as intense as found towards the intrusion centre but occurs in irregular patterns. Outcrop exposure is poor. These factors diminish the building stone potential for this rock.

METHUEN TRONDHJEMITE AND BELMONT GRANITE

LOCATION A 3 to 4 km wide body extending from the southwest corner to the northeast corner of Methuen Township. A smaller body straddling the Belmont-Methuen Township boundary is grouped with the Methuen trondhjemite. It is referred to as the Belmont Granite by Bartlett and Moore (1985).

NTS 31 C/5, 12, 13 **OGS** Maps 1960E, P.2613
Geological Report ODM vol.69, pt.8; OFR 5537

SAMPLE SITES 86-BEL-001, 86-MET-001

DESCRIPTION OF AREA
The Methuen trondhjemite, referred to by Hewitt (1961, p.111) as the Methuen granite, is described as follows:

"The largest granitic intrusive is the Methuen granite, which consists mainly of medium- to coarse-grained pink gneissic biotite granite. Some facies are pink biotite granite porphyry with large feldspar phenocrysts (up to 1 inch). A grey, fine- to medium-grained biotite granodiorite occurs as large inclusions in the Methuen granite."

The smaller granitic body south of the Methuen trondhjemite (Belmont Granite) is described by Bartlett and Moore as fine- to coarse-grained leucogranite, porphyritic granite, quartz monzonite, and granodiorite.

Both are considered to be late tectonic intrusions. The Methuen trondhjemite, at sample site 86-MET-001, is foliated with regular, but intense, jointing. The Belmont site is located at the old Fairmont granite quarry and shows a massive texture with moderate, regular jointing, but intense horizontal microfracturing.

CONCLUSIONS
The building stone potential of the Belmont granite and the Methuen trondhjemite at the sites examined is low but investigation of other parts of the intrusions are warranted based on the regular jointing.

POTENTIAL

POOR	MODERATE	GOOD
86-BEL-001 86-MET-001		

REFERENCES

Bartlett, J.R. and Moore, J.M. Jr. 1985. Geology of Belmont, Marmora, and Southern Methuen townships, Peterborough and Hastings counties; Ontario Geological Survey, Open File Report 5537, 236p.

Carmichael, D.M. 1970. Intersecting isograds in the Whetstone Lake area, Ontario; Journal of Petrology, v.11, pt.1, p.147-181.

Chesworth, W., Shaw, D. and Dostal, J. 1975. Granitoid rocks of the Madoc-Bancroft-Haliburton area of the Grenville Province; in University of Waterloo Field Excursions Guidebook 1975, The Geological Association of Canada, The Mineralogical Association of Canada, and The Geological Society of America, Field Trip 1, p.1-25.

Gillespie, J.E. and Protz, R. 1969. Evidence for the residual character of two soils, one on granite, the other on limestone, in Peterborough County, Ontario; Canadian Journal of Earth Sciences, v.6, p.1217-1225.

Hewitt, D.F. 1956. The Grenville region of Ontario; in The Grenville Problem, Royal Society of Canada, Special Publication 1, p.22-41.

---1961. Nepheline syenite deposits of southern Ontario; Ontario Department of Mines, Annual Report, 1960, v.69, pt.8.

Hewitt, D.F. and Satterly, J. 1957. Haliburton-Bancroft area, Province of Ontario; Ontario Department of Mines, Map 1957B, scale 1:126 720.

Keith, M.L. 1939. Petrology of the alkaline intrusive at Blue Mountain; Geological Society of America, v.50, p.1795-1826.
MacDonald, G. 1970. Geology-Kingston area; Department of Geology, Carleton University, 1968-70.

MacIntyre, R.M., York, D. and Moorhouse, W.W. 1967. Potassium-argon age determinations in the Madoc-Bancroft area in the Grenville Province of the Canadian Shield; Canadian Journal of Earth Sciences, v.14, p.815-828.

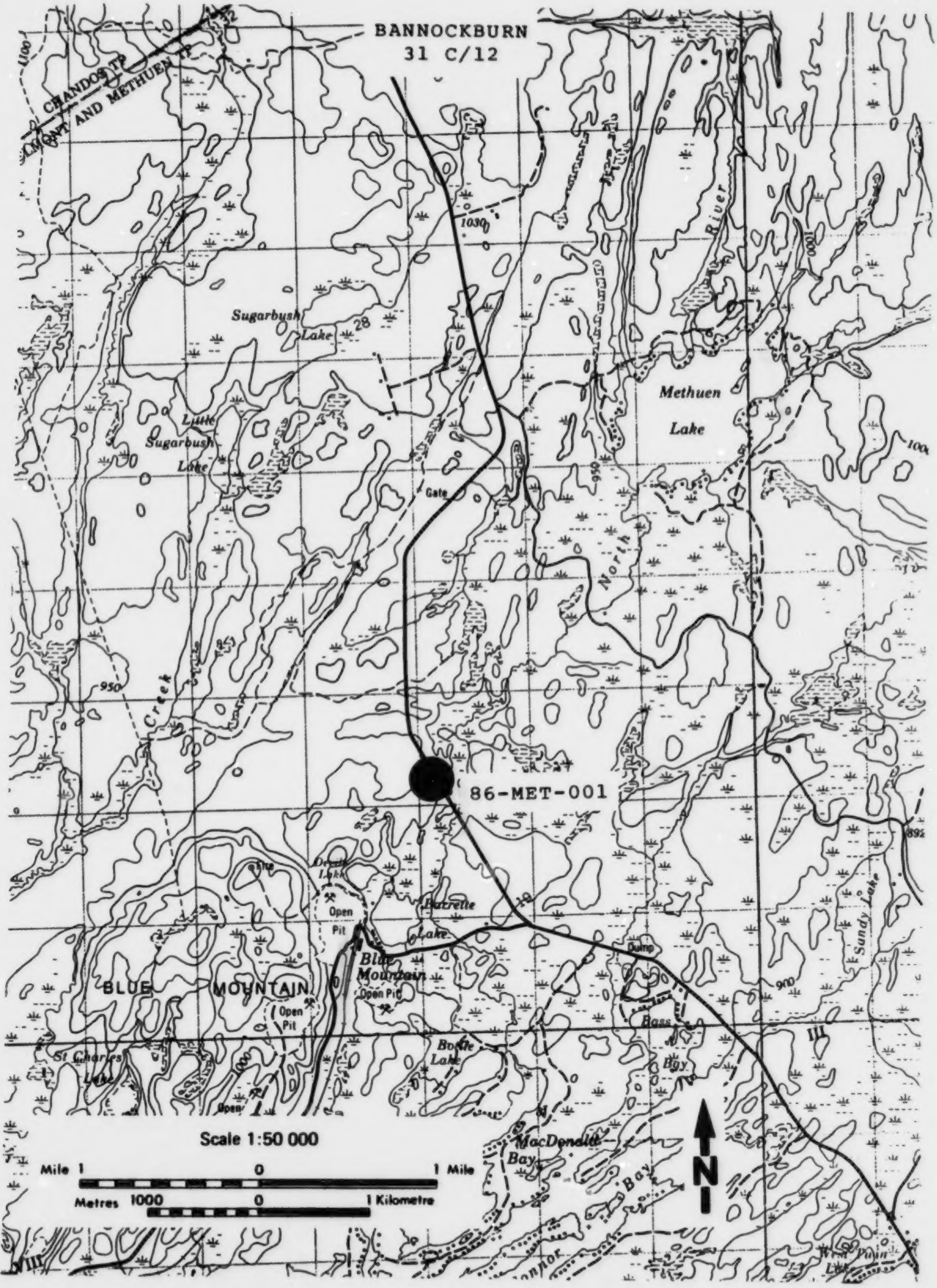
BANNOCKBURN
31 C/12
CHANDOS TP
BELMONT AND METHUEN TP
Sugarbush Lake
Little Sugarbush Lake
Methuen Lake
North River
Gate
Creek
86-MET-001
Open Pit
Blue Mountain
BLUE MOUNTAIN
Bottle Lake
St Charles Lake
Bass Bay
MacDonald Bay
Sandy Lake
Dump
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B27. Sample location, Methuen trondhjemite and Belmont granite (sheet 1).

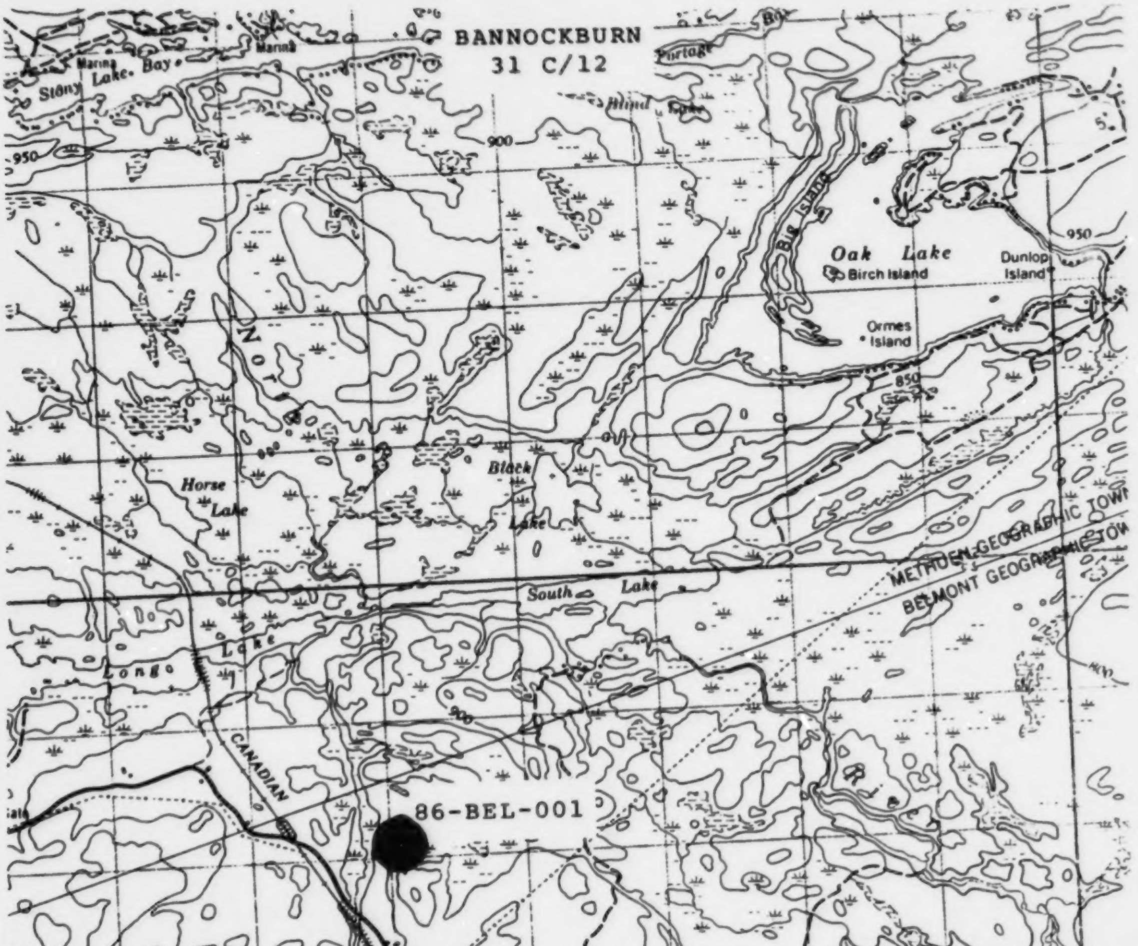
BANNOCKBURN
31 C/12
Stony Lake Bay
Marina
Portage
Blind Lake
900
950
Big Island
Oak Lake
Birch Island
Dunlop Island
Ormes Island
850
North
Horse Lake
Black Lake
South Lake
Longo Lake
METHUEN GEOGRAPHIC TOWNSHIP
BELMONT GEOGRAPHIC TOWNSHIP
CANADIAN
PACIFIC
86-BEL-001
893
River
BELMONT AND METHUEN
DUMMER TP
VIII
XII
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B28. Sample location, Methuen trondhjemite and Belmont granite (sheet 2).

86-BEL-001

PROPERTY NO. 86-BEL-001 **PLUTON NAME** Methuen Trondhjemite

PROPERTY NAME Fairmont Granite **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Pink Granite

TOWNSHIP Belmont **LOT** 31 **CONC.** 10

NTS 31 C/5 **UTM CO-ORDINATES** Easting 265100 Northing 4938100

PROPERTY STATUS Inactive **AIR PHOTO NO.**

PRODUCTION HISTORY Fairmont granite quarry

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface Pink
Weathered Surface Brownish to black
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing X Moderate Jointing Intensive Jointing
A) Strike 130 degrees Dip Spacing 3 to 4 m
B) Strike 50 degrees Dip Spacing 1.5 m
C) Strike Dip horizontal Spacing <0.5 m fracturing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Good

MINERALOGY K-spar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Minor quartz veining <1 cm, some biotite pods, some areas of quarry show extensive sheeting and discontinuous horizontal fractures.

POSSIBLE USES Crushed stone, ashlar, curbing stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This site showed very good potential in terms of colour, texture, vertical jointing and lack of deleterious minerals. However, after development of the quarry had started, a pervasive, intense, horizontal microfracturing was observed, probably related to sheeting. These fractures are more apparent on a polished surface and diminish the structural integrity of the stone, thereby limiting the building stone potential.

Photo B44. Overall view of Fairmont granite quarry; note limited jointing. 86-BEL-001

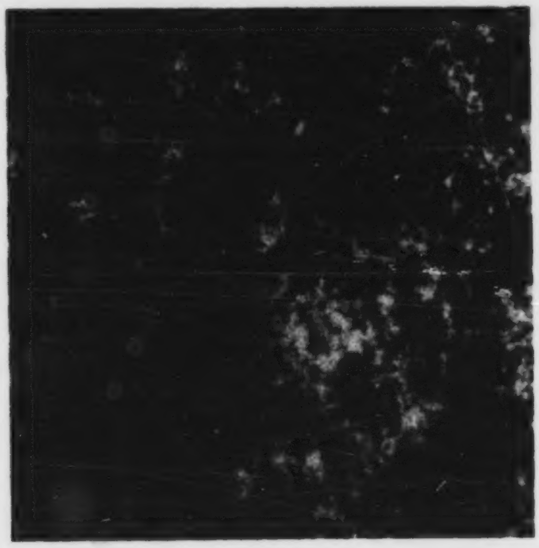

Photo B45. Uniform medium grain size and pink colour. 86-BEL-001

PROPERTY NO. 86-MET-001 **PLUTON NAME** Methuen Trondjemite

PROPERTY NAME Blue Mountain **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Methuen **LOT** 21 **CONC.** 5

NTS 31 C/12, 13 **UTM CO-ORDINATES** Easting 267150 Northing 4952250

PROPERTY STATUS Roadside Rockcut **AIR PHOTO NO.**

PRODUCTION HISTORY 34.7 km north of Havelock on the way to Lasswade (County Road #46)

USE OF EXPLOSIVES Yes X No Type High Velocity

COLOUR Fresh Surface Dark pink
Weathered Surface Light greyish pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Foliation - alignment of mafics

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing X

A)	Strike	Horizontal	Dip		Spacing	≤1 m
B)	Strike	51 degrees	Dip	Vertical	Spacing	≤1 m
C)	Strike	125 degrees	Dip	Vertical	Spacing	1 to 1.5 m
D)	Strike	150 degrees	Dip	Vertical	Spacing	≤1 m

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, biotite, quartz

DELETERIOUS MINERALS Yes X No Type Percent

OTHER FEATURES Pegmatite banding, extensive sheeting, hematite staining on fractures.

POSSIBLE USES Crushed stone, ashlar, curbing stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This site shows very limited potential for building stone due to abundant pegmatite dikes which reduce the potential size of quarry blocks. The rock has a strongly foliated appearance due to the alignment of biotite. The grain size is medium and the colour on the fresh surface is a dark pink. The area displays extensive sheeting and also horizontal jointing of up to 1 m. This site is a roadcut in the granite within 300 m of the contact with metasediments. Any further investigation of this pluton should be conducted farther to the south.

Photo B46. Good outcrop exposure showing vertical and horizontal joint sets. 86-MET-001

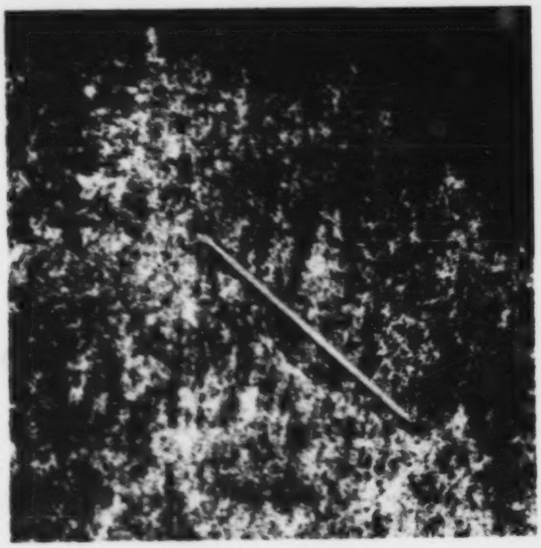

Photo B47. Dark pink granite showing foliated texture and medium grain size. 86-MET-001

MOUNT MORIAH SYENITE

LOCATION Southwest corner of Grimsthorpe Township and extreme northwest corner of Elzevir Township

NTS 31 C/11 OGS Map 51D Geological Report AR 51, pt.4

SAMPLE SITES 86-ELZ-010, 86-ELZ-011, 86-ELZ-012, 86-GRI-001, 86-GRI-002, 86-GRI-003, 86-GRI-004, 86-GRI-005

DESCRIPTION OF AREA

Only one rock type has been encountered to date on Mount Moriah. This is brown, medium- to coarse-grained, massive syenite consisting predominantly of K-spar and hornblende (mostly pyroxene according to Brown and Thivierge 1979). The area examined comprises the southeast quarter of the intrusion.

The southwest margin of the intrusion is identified as a mafic (biotite)-poor syenite late phase (Brown and Thivierge 1979) occurring as an arcuate mass, whereas the remainder of the intrusion is considered an augite/(hornblende) syenite early phase.

CONCLUSIONS

The Mount Moriah syenite shows promise for building stone potential in terms of uniform colour, texture and limited to moderate jointing (exposed 10 to 30 m surface areas can be found). However, horizontal jointing (0.5 to 5.0 m) and poor access are limiting factors. Some potential for large quarry blocks may be realized (86-GRI-005), as well as curbing and possibly architectural stone (86-GRI-004, 003, 002) and rarely, (if finer grained) monumental stone.

POTENTIAL

POOR		MODERATE	GOOD
86-ELZ-010	86-ELZ-011		
86-ELZ-012	86-GRI-001		
	86-GRI-002		
	86-GRI-003		
	86-GRI-004		
			86-GRI-005

REFERENCES

Brown, P.A. and Thivierge, R. 1979. A preliminary report on the Mount Moriah granite; Geological Survey of Canada, Energy, Mines and Resources Canada, for Atomic Energy Canada Ltd., Technical Record - TR-15, 22p.

Hewitt, D.F. 1968. Geology of Madoc Township and the north part of Huntingdon Township, Hastings County; Ontario Department of Mines, Geological Report 73, 45p.

Meen, V.B., and Harding, W.D. 1942. Grimsthorpe-Kennebec area, counties of Hastings, Lennox and Addington, and Frontenac, Ontario; Ontario Department of Mines, Map 51D, scale 1:63 360.

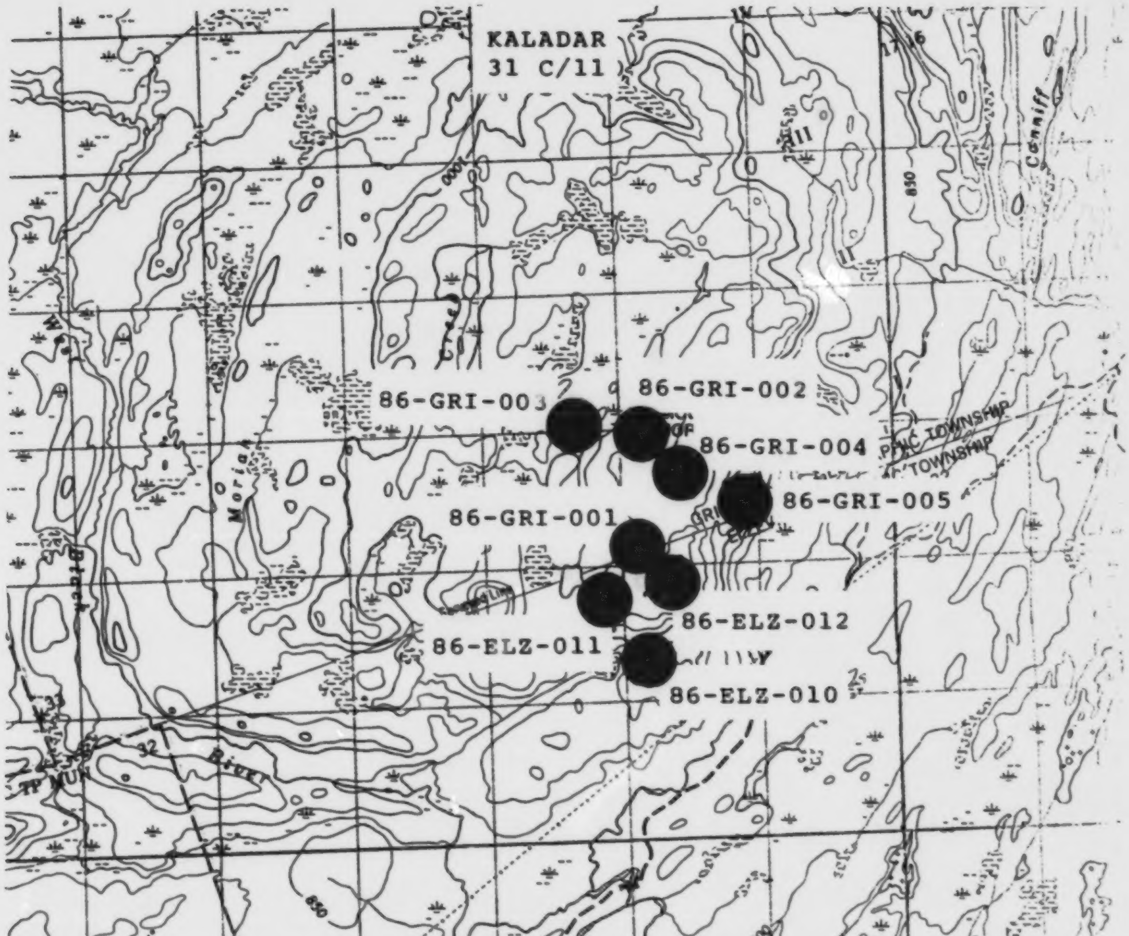
KALADAR
31 C/11
86-GRI-003
86-GRI-002
86-GRI-004
86-GRI-005
86-GRI-001
86-ELZ-012
86-ELZ-011
86-ELZ-010
86-ElZ-001
TOWNSHIP
TOWNSHIP
Moriah
Birch
River
Canniff
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
Cemetery

Figure B29. Sample locations, Mount Moriah syenite.

86-ELZ-010

PROPERTY NO. 86-ELZ-010 **PLUTON NAME** Mt. Moriah Syenite

PROPERTY NAME The Flats-1 (Mount Moriah) **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Quartz Syenite

TOWNSHIP Elzevir **LOT** 31 **CONC.** 3

NTS 31 C/11 **UTM CO-ORDINATES** Easting 308150 Northing 4951300

PROPERTY STATUS Prospect **Air Photo No.** 78-4445-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey-brown
Weathered Surface Grey-brown
Uniform X Variable

WEATHERING DEPTH ≤0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing X

A) Strike 300 degrees	Dip 60 degrees NE	Spacing 0.5 to 1.0 m
B) Strike 025 degrees	Dip 90 degrees	Spacing 1.0 to 3.0 m
C) Strike Horizontal	Dip	Spacing 0.3 to 1.0 m
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, K-spar, amphibole, biotite, quartz

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Nil

POSSIBLE USES Ashlar, paving stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a massive, medium-grained, dark brown, quartz syenite. The feldspars are slightly altered to clay minerals. The outcrop exposure at this site is extensive, however, the poor access and intense irregular jointing limit the building stone potential of the area.

Photo B48. Regular horizontal sheeting along with vertical joint sets. 86-ELZ-010

86-ELZ-011

PROPERTY NO. 86-ELZ-011 **PLUTON NAME** Mt. Moriah Syenite

PROPERTY NAME The Flats-2 (Mount Moriah) **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Elzevir **LOT** 32 **CONC.** 3

NTS 31 C/11 **UTM CO-ORDINATES** Easting 307850 Northing 4951750

PROPERTY STATUS Prospect **Air Photo No.** 78-4449-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Reddish brown
Weathered Surface Brownish grey
Uniform X Variable

WEATHERING DEPTH $\leq$0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing X Moderate Jointing Intensive Jointing

A)	Strike Horizontal	Dip	Spacing 1.0 to 1.5 m
B)	Strike 126 degrees	Dip 90 degrees	Spacing 1.0 m
C)	Strike	Dip	Spacing
D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor to fair

MINERALOGY Feldspar, biotite, amphibole

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Nil

POSSIBLE USES Some quarry blocks may be viable.

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS The Mount Moriah Syenite at this location is medium grained, reddish brown in colour and massive. Few deleterious features were observed in this rock and jointing occurred in regular sets with moderate spacing. The limited access and poor outcrop exposure are two factors which reduce building stone potential for this area.

86-ELZ-012

PROPERTY NO. 86-ELZ-012 **PLUTON NAME** Mt. Moriah Syenite

PROPERTY NAME Mount Moriah-Benchmark 1215 **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Elzevir **LOT** 32 **CONC.** 3

NTS 31 C/11 **UTM CO-ORDINATES** Easting 308300 Northing 4951850

PROPERTY STATUS Prospect **Air Photo No.** 78-4449-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey-brown
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern (X) Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing (X)

Intense	A) Strike	Horizontal	Dip		Spacing	≤0.5 m
Weak	B) Strike	120 degrees	Dip	Steep (W)	Spacing	1.0 to 3.0 m
Local	C) Strike	060 degrees	Dip	90 degrees	Spacing	Wide (5 to 10 m)
	D) Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, amphibole, biotite; Mafic content: approx. 20%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Occasional felsic stringers (average 4 cm wide), slight amphibole alteration.

POSSIBLE USES Paving stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This sample is a medium-grained, massive, brown syenite. The amphibole in this rock is slightly altered to chlorite. Intense horizontal jointing and poor access are the principal factors which limit building stone potential in this area.

86-GRI-001

PROPERTY NO. 86-GRI-001

PLUTON NAME Mt. Moriah Syenite

PROPERTY NAME Fools Lake
(Mount Moriah)

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Grimsthorpe

LOT 23 **CONC.** 1

NTS 31 C/11 **UTM CO-ORDINATES** Easting 308100 Northing 4952150

PROPERTY STATUS Prospect

Air Photo No. 78-4449-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brown
Weathered Surface Grey-brown
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing (X) Moderate Jointing X Intensive Jointing

A) Strike 150 degrees	Dip 30 degrees E	Spacing 0.3 to 0.8 m
B) Strike 122 degrees	Dip 90 degrees	Spacing 1.5 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair to poor

MINERALOGY Feldspar, hornblende, biotite; Mafic content: approx. 25%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Three 1 to 3 cm wide felsic stringers observed.

POSSIBLE USES Some quarry blocks for architectural stone may be feasible.

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, massive, brown syenite. Vertical jointing occurs in regular joint sets with moderate spacing, however, the horizontal jointing was observed to be more closely spaced. At this time, access to the Mount Moriah syenite is poor. The presence of rare felsic stringers further limit building stone potential for this area.

86-GRI-002

PROPERTY NO. 86-GRI-002 — PLUTON NAME Mt. Moriah Syenite

PROPERTY NAME Firetower-Benchmark 1215′ (Mount Moriah) — COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Grimsthorpe — LOT 22 — CONC. 1

NTS 31 C/11 — UTM CO-ORDINATES Easting 308200 Northing 4952900

PROPERTY STATUS Prospect — Air Photo No. 78-4449-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR
Fresh Surface Brown
Weathered Surface Grey-brown
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium (to coarse) Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing

A) Strike 105 degrees	Dip 90 degrees	Spacing 1.0 to 2.0 m
B) Strike	Dip	Spacing
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor to moderate

MINERALOGY Feldspar, amphibole, biotite; Mafic content: approx. 25%

DELETERIOUS MINERALS Yes X No Type Hematite observed along one fracture plane Percent Trace

OTHER FEATURES One 1 cm wide felsic stringer observed, shallow (1 cm thick) exfoliation patches (average 0.5 m^2).

POSSIBLE USES Curbing stone, some architectural stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This sample is a medium-grained, massive syenite. Hematite stained joint planes and a felsic stringer were observed. Jointing is moderately spaced and generally occurs in regular sets. Access to this area is poor.

86-GRI-003

PROPERTY NO. 86-GRI-003 **PLUTON NAME** Mt. Moriah Syenite

PROPERTY NAME Gypsy Moth Hill (Mount Moriah) **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Grimsthorpe **LOT** 23 **CONC.** 2

NTS 31 C/11 **UTM CO-ORDINATES** Easting 307600 Northing 4953000

PROPERTY STATUS Prospect **Air Photo No.** 78-4449-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brown
Weathered Surface Grey-brown
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing
Subhorizontal A) Strike 010 degrees Dip 20 degrees E Spacing ≤1 m
Benches
B) Strike 156 degrees Dip 90 degrees Spacing 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor to moderate

MINERALOGY Feldspar, amphibole, minor pyroxene

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Limited to moderate felsic stringers (average 1 cm wide); one 10 cm wide pegmatite stringer observed; ≤1 cm thick surface exfoliation patches (surface weathering/peeling).

POSSIBLE USES Curbing stone, possibly architectural stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This is a massive, medium-grained, brown syenite. Grain size, colour and texture are uniform throughout the outcrop and surface exposure is good. Regular joint patterns with moderate spacing were observed. Horizontal jointing predominates. The building stone potential of this rock is limited primarily by the presence of felsic stringers and exfoliation.

Photo B49. Average 1 m thick benches (subhorizontal sheeting). 86-GRI-003

86-GRI-004

PROPERTY NO. 86-GRI-004 **PLUTON NAME** Mt. Moriah Syenite

PROPERTY NAME Road Top (east of Mt. Moriah Firetower) **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Grimsthorpe **LOT** 22 **CONC.** 1

NTS 31 C/11 **UTM CO-ORDINATES** Easting 308450 Northing 4952700

PROPERTY STATUS Prospect **Air Photo No.** 78-4448-157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brown
Weathered Surface Grey-brown
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing X Moderate Jointing X Intensive Jointing
Subhorizontal A) Strike 010 degrees Dip 10 degrees E Spacing 1.0 m (avg.)
Benches
(Sheeting) B) Strike 115 degrees Dip 90 degrees Spacing 1.0 to 5.0 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor to moderate

MINERALOGY Feldspar, amphibole, biotite, minor pyroxene

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Sheeting

POSSIBLE USES Curbing stone, possibly architectural stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a brown, medium-grained, massive syenite. Vertical jointing is of a limited to moderate intensity and occurs in regular sets. The horizontal jointing is more closely spaced. Despite the fact that outcrop exposure is good, access to the area is limited which further diminishes its appeal to the building stone industry.

86-GRI-005

PROPERTY NO. 86-GRI-005 PLUTON NAME Mt. Moriah Syenite

PROPERTY NAME Genereaux Hunt Camp 82 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Grimsthorpe LOT 21 CONC. 1

NTS 31 C/11 UTM CO-ORDINATES Easting 308900 Northing 4952500

PROPERTY STATUS Prospect Air Photo No. 78-4445 157-228

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark mauve brown
Weathered Surface Grey-brown
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Coarse-medium Uniform X Variable (X)

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing X Moderate Jointing X Intensive Jointing
A) Strike 010 degrees Dip Shallow E Spacing 1 to 2 m
B) Strike 100 degrees Dip 90 degrees Spacing 1 to 2 m, up to
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Good

MINERALOGY Feldspar, amphibole, biotite; Mafic content: approx. 20%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES A 1 cm wide granitic stringer was observed.

POSSIBLE USES Architectural stone, structural stone, curbing stone etc.

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS Some 10 to 30 m^2 joint-free areas were observed. Jointing is generally regular in pattern, with two major vertical sets and a horizontal to subhorizontal sheeting plane.

***Photo B50**. Textural close-up of grey-brown syenite. 86-GRI-005*

MOUNTAIN GROVE MAFIC INTRUSION

LOCATION Southwestern Olden Township, north of Long Lake and south of Bass Lake

NTS 31 C/10 OGS Map 2249 Report 216

SAMPLE SITE 86-OLD-027

DESCRIPTION OF AREA
Wolff (1982, p.30) described the Mountain Grove mafic intrusion as follows:

"Compositionally, the body varies from gabbro and quartz gabbro to anorthosite, monzonite and syenite. Outcrops of these units tend to be small and massive with locally developed penetrative fractures. Individual outcrops may have more than one phase present. Igneous layering or banding, however, is absent and the different phases have irregular contacts. Locally, intrusive breccias between phases are observed."

The rock at site 86-OLD-027 is a massive, black gabbro which is attractive but contains deleterious features including intense, irregular fracturing, pyrite and felsic stringers.

CONCLUSIONS
The Mountain Grove mafic intrusion has little potential as a source of building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-OLD-027		

REFERENCE
Wolff, J.M. 1982. Geology of the Long Lake area; Ontario Geological Survey, Report 216, 76p.

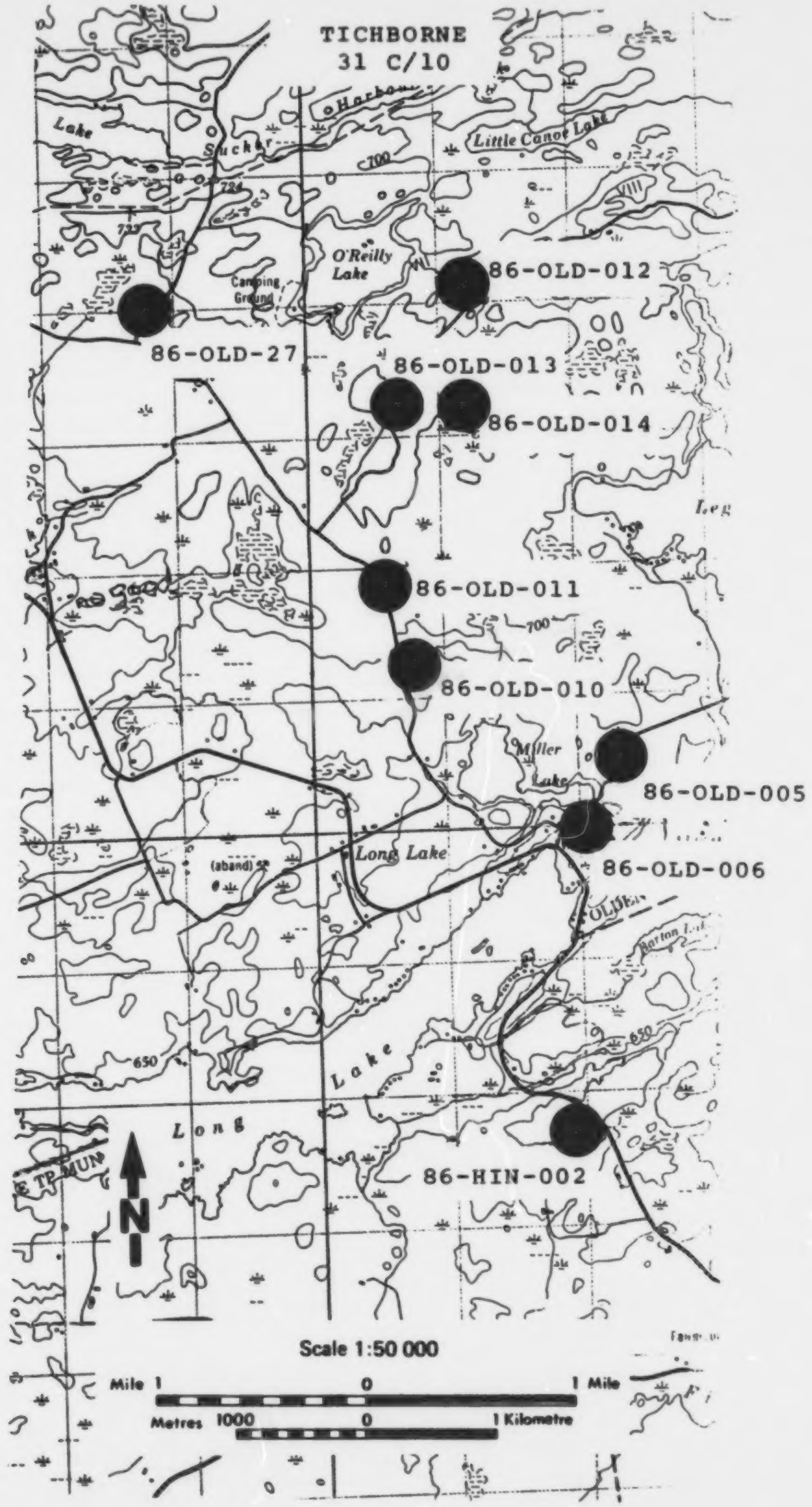
TICHBORNE
31 C/10
Harbour
Lake
Sucker
Little Canoe Lake
700
724
O'Reilly Lake
Camping Ground
86-OLD-012
86-OLD-27
86-OLD-013
86-OLD-014
Leg
86-OLD-011
700
86-OLD-010
Miller Lake
86-OLD-005
86-OLD-006
Long Lake
(aband)
Barton Lake
650
650
Long Lake
E TP MUN
N
86-HIN-002
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B30. Sample locations, Mountain Grove mafic intrusion.

86-OLD-027

PROPERTY NO. 86-OLD-027 **PLUTON NAME** Mountain Grove Mafic Intrusion

PROPERTY NAME Brewers Road **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Olden **LOT** 10 **CONC.** 6

NTS 31 C/10 **UTM CO-ORDINATES** Easting 358800 Northing 4954000

PROPERTY STATUS Roadcut **Air Photo No.** 78-4451-143-112

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High velocity

COLOUR Fresh Surface Almost black - very dark grey
Weathered Surface Light grey
Uniform X Variable

WEATHERING DEPTH 5 mm

GRAIN SIZE Medium to coarse Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 130 degrees Dip Vertical Spacing 0.25 to 0.5 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, pyroxene

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Many felsic stringers were noted in the area.

POSSIBLE USES Ornamental stone, ashlar, paving stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The stone at this site is a dark grey to black gabbro and is quite attractive. The area shows fair outcropping with intense irregular jointing. The rock is uniformly massive and medium to coarse grained. Jointing, felsic stringers and trace amounts of pyrite combine to make this a poor prospect for building stone.

NEWBORO PLUTON

LOCATION North Crosby Township, between Westport and Newboro

NTS 31 C/9 OGS Map 2054 GSC Map 1182A GSC Memoir 346

SAMPLE SITE 86-NCROS-005

DESCRIPTION OF AREA
The Newboro pluton has very limited exposure which made both sampling and evaluation difficult. Access across the centre of the pluton was possible by a hydro line. This was traversed but no outcrop was encountered.

The rock is an attractive red-brown syenite that has a uniform colour, texture and grain size. The jointing is regular but the intensity is indeterminate. Wynne-Edwards (1967, p.84) described the Newboro Lake area as follows:

"The Newboro Lake area is a northeastward extension of the Devil Lake block, but the structures within it are less clearly defined. Layered genisses with associated fine-grained pink granulite are exposed on islands in Newboro Lake and trend east-northeast to northeast with northwestward dips. North of Scott Island, these rock abruptly swing northwestward towards the Devil Lake anticline and describe an arc about the monzonite body west of Newboro. Concomitantly, the direction of plunge of fold axes changes progressively from northeast in the western part of the area through north, to northwest near Newboro village. The amount of plunge remains roughly constant at about 55 degrees throughout the area, so that the fold axes trace out part of a cone with a vertical axis. The arcuate trend of these gneisses and the change in direction of the fold axes appear to be related to the late stages of deformation in the Rideau Lakes area."

CONCLUSIONS
Due to the highly limited outcrop exposure and the presence of sulphides (1%), this pluton has a very low potential for building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-NCROS-005		

REFERENCES

Hewitt, D.F. 1964. Geological notes for Maps Nos. 2053 and 2054, Madoc-Gananoque area, NTS 31B/5+12, 31C, Ontario; Ontario Department of Mines, Geological Circular 12, 33p.

Wynne-Edwards, H.R. 1967. Westport map-area, Ontario; Geological Survey of Canada, Memoir 346, 142p.

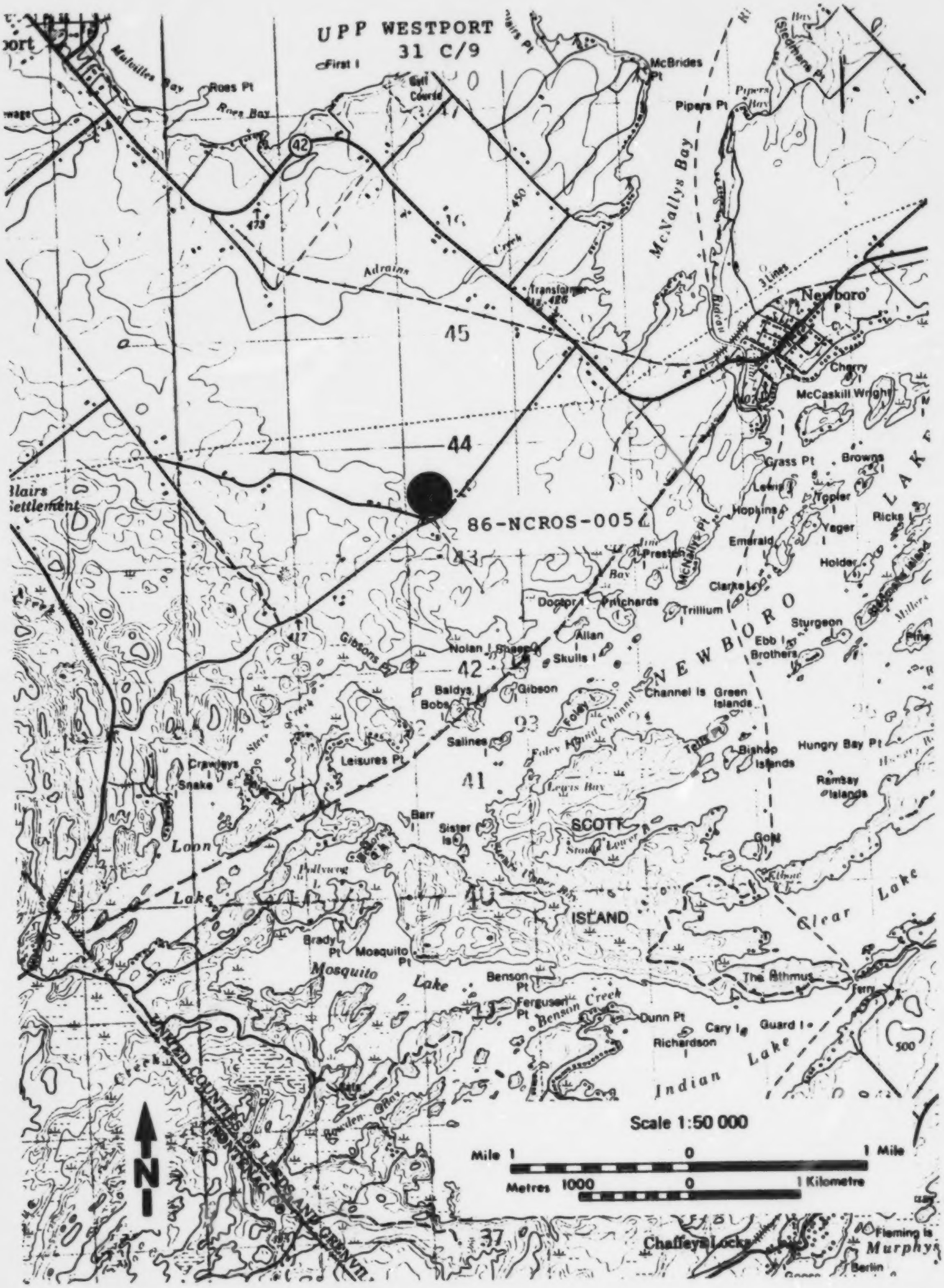
UPP WESTPORT
31 C/9
86-NCROS-005
Newboro
McNallys Bay
NEWBORO LAKE
SCOTT ISLAND
Loon Lake
Mosquito Lake
Indian Lake
Clear Lake
Blairs Settlement
Chaffeys Locks
Murphys
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B31. Sample location, Newboro pluton.

86-NCROS-005

PROPERTY NO. 86-NCROS-005 PLUTON NAME Newboro Pluton

PROPERTY NAME Blairs Settlement COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP North Crosby LOT 3 CONC. 7

NTS 31 C/9 UTM CO-ORDINATES Easting 392050 Northing 4943450

PROPERTY STATUS Prospect Air Photo No.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type Roadcut

COLOUR Fresh Surface Reddish brown
Weathered Surface Bleached pink to dark grey
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X (blasting)
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 030 degrees Dip vertical Spacing (blasting)
B) Strike 110 degrees Dip vertical Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, pyroxene (amphibole); Mafic content: approx. 20 to 30%

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Small volume, cut by a silica dike, rare mafic stringers (2 mm).

POSSIBLE USES Terrazzo chips, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This is a very attractive, reddish-brown syenite which is very competent and has few flaws. However, the site is adjacent to a large quartz dike and a zone of pegmatitic material, and the rock locally contains mafic stringers. Outcrop exposure is poor and blasting has obscured the joint pattern.

NORTHBROOK BATHOLITH

LOCATION Northeast quarter of Kaladar Township and the northern half of Kennebec Township

NTS 31 C/11 **OGS** Maps 51D, 2432 Geological Reports 215, AR 51, pt.4

SAMPLE SITES 86-KAL-006, 86-KEN-001, 86-KEN-002, 86-KEN-003, 86-KEN-004, 86-KEN-005, 86-KEN-006

DESCRIPTION OF AREA

Wolff (1982b, p.44) described this batholith as follows:

""This body is structurally very massive, weakly lineated with a locally developed discontinuous gneissosity. The batholith contains many northeast and east-trending lineaments which truncate and cut one another. Faults with obvious offsets tend to have southeasterly trends. Some southeast trending pink-white pegmatite dikes cut the batholith along its southern margin."

Rock types observed within the Northbrook batholith consist of monzonites, specifically quartz monzonites and biotite quartz monzonites. All of these are moderately to strongly foliated (due to alignment of biotite crystals). The northernmost samples appear to be less foliated than the southern sites (86-KEN-001, 002, 003, 004). The average strike of the foliation is 50 degrees and the dip is variable to the south. One site, in Kaladar Township, has a dip of 70 degrees to the west.

The colour of all of the sites in Kennebec Township is generally uniform pink to light pink. The Kaladar site (86-KAL-006) has a brown/black fresh surface which is also uniform.

Jointing is one of the major limiting factors at all of these sites. All sites show irregular and regular jointing and all but one (86-KEN-001) is jointed intensely. Horizontal sheeting is also evident and rarely reaches spacings of over 1 m, averaging approximately 0.5 m.

Other features which hamper the potential for building stone include pegmatite dikes, many quartz stringers, aplite pods and exfoliation. Some sites have areas where large-sized blocks could be removed without jointing problems. These same areas were invariably plagued with the shortcomings listed above.

CONCLUSION

The Northbrook batholith has little potential for large quarry blocks. In areas such as 86-KEN-001 it would be feasible for rock to be removed for ashlar, paving stone or crushed stone, if a nearby market for such could be found.

POTENTIAL

POOR		MODERATE	GOOD
86-KAL-006		86-KEN-001	
	86-KEN-002		
	86-KEN-003		
	86-KEN-004		
86-KEN-005			
86-KEN-006			

REFERENCES

Ambrose, J.M. and Burns, C.A. 1956. Structures in the Clare River syncline: a demonstration of granitization; Royal Society of Canada, Special Publication 1, p.42-53.

Brown, R.L., Chappell, J.F., Moore, J.M., Jr. and Thompson, P.H. 1975. An ensimatic island arc and ocean closure in the Grenville Province of southeastern Ontario, Canada; Geoscience Canada, v.2, no.3, p.141-144.

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---1951. Geology of the Olden-Bedford area, Frontenac County, Ontario; Ontario Department of Mines, Annual Report, 1947, v.56, pt.6.

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Meen, V.B. 1944. Geology of the Grimsthorpe-Barrie area, Hastings, Lennox and Addington, and Frontenac counties, Ontario; Ontario Department of Mines, Annual Report, 1942, v.51, pt.4, p.1-50.

Moore, J.M. and Thompson, P.H. 1972. The Flinton Group, Grenville Province, eastern Ontario; Proceedings of the 24th International Geological Congress, Montreal, p.221-229.

Psutka, J.F. 1976. Provenance of the plutonic pebbles in the Kaladar metaconglomerate and geology of associated metasediments; unpublished BSc thesis, Carleton University, Ottawa.

Wolff, J.M. 1978. Geology of the Kaladar area, NTS 31C/11NE, Southern Ontario; Ontario Geological Survey, Report 215, 95p.

---1978. Long Lake area, Frontenac County; in Summary of Field Work, 1978, Ontario Geological Survey, Miscellaneous Paper 82, p.119-212.

---1982a. Geology of the Long Lake area; Ontario Geological Survey, Report 216, 76p.

---1982b. Geology of the Kaladar area, Frontenac, and Lennox and Addington counties; Ontario Geological Survey, Report 215, 94p.

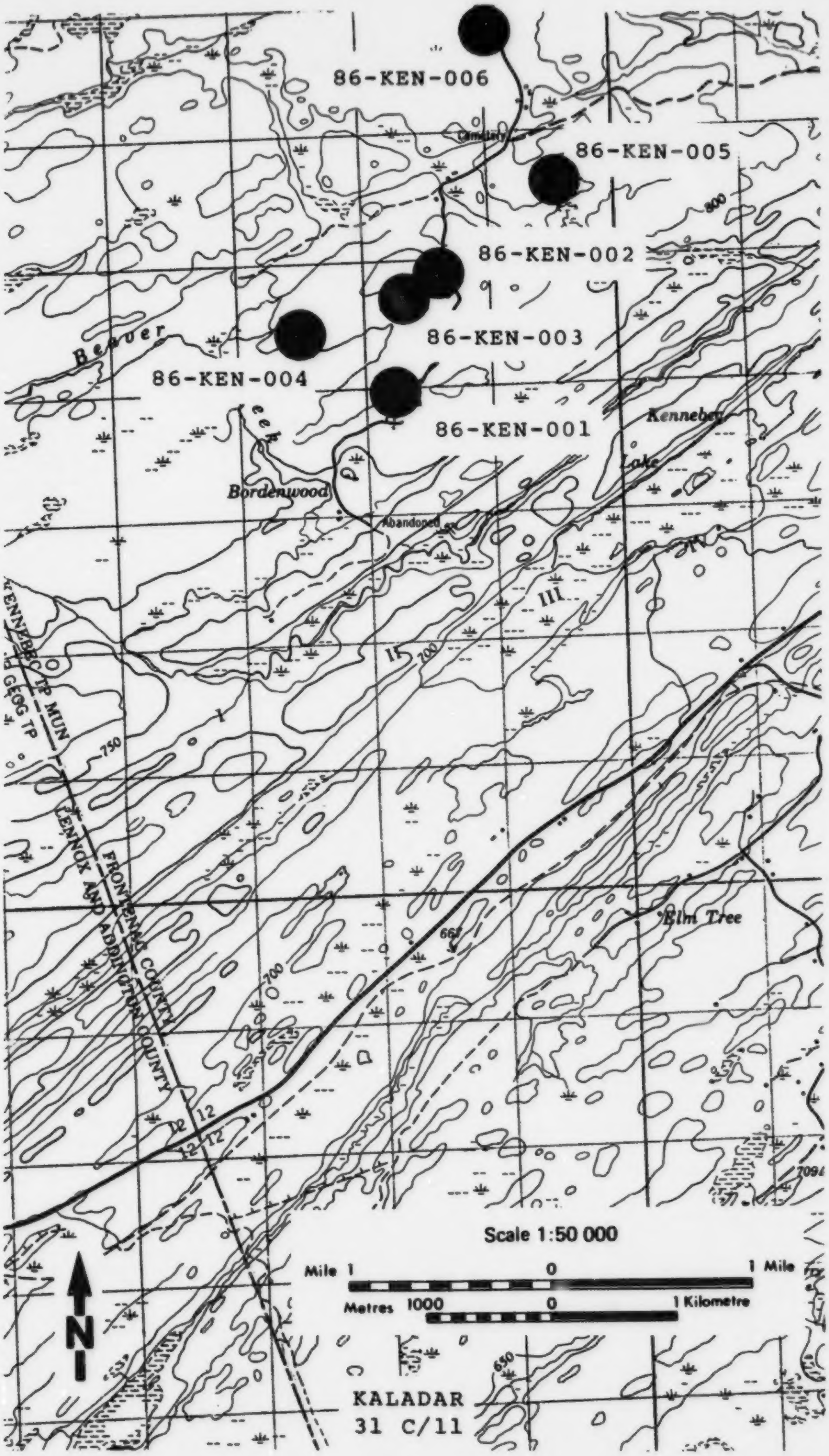
86-KEN-006
86-KEN-005
86-KEN-002
86-KEN-003
86-KEN-004
86-KEN-001
Beaver Creek
Kennebec Lake
Bordenwood
Abandoned
Elm Tree
KENNEBEC TP MUN
BARRIE TP
FRONTENAC COUNTY
LENNOX AND ADDINGTON COUNTY
800
750
700
661
650
I
II
III
12
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
KALADAR
31 C/11

Figure B32. Sample locations, Northbrook batholith (sheet 1).

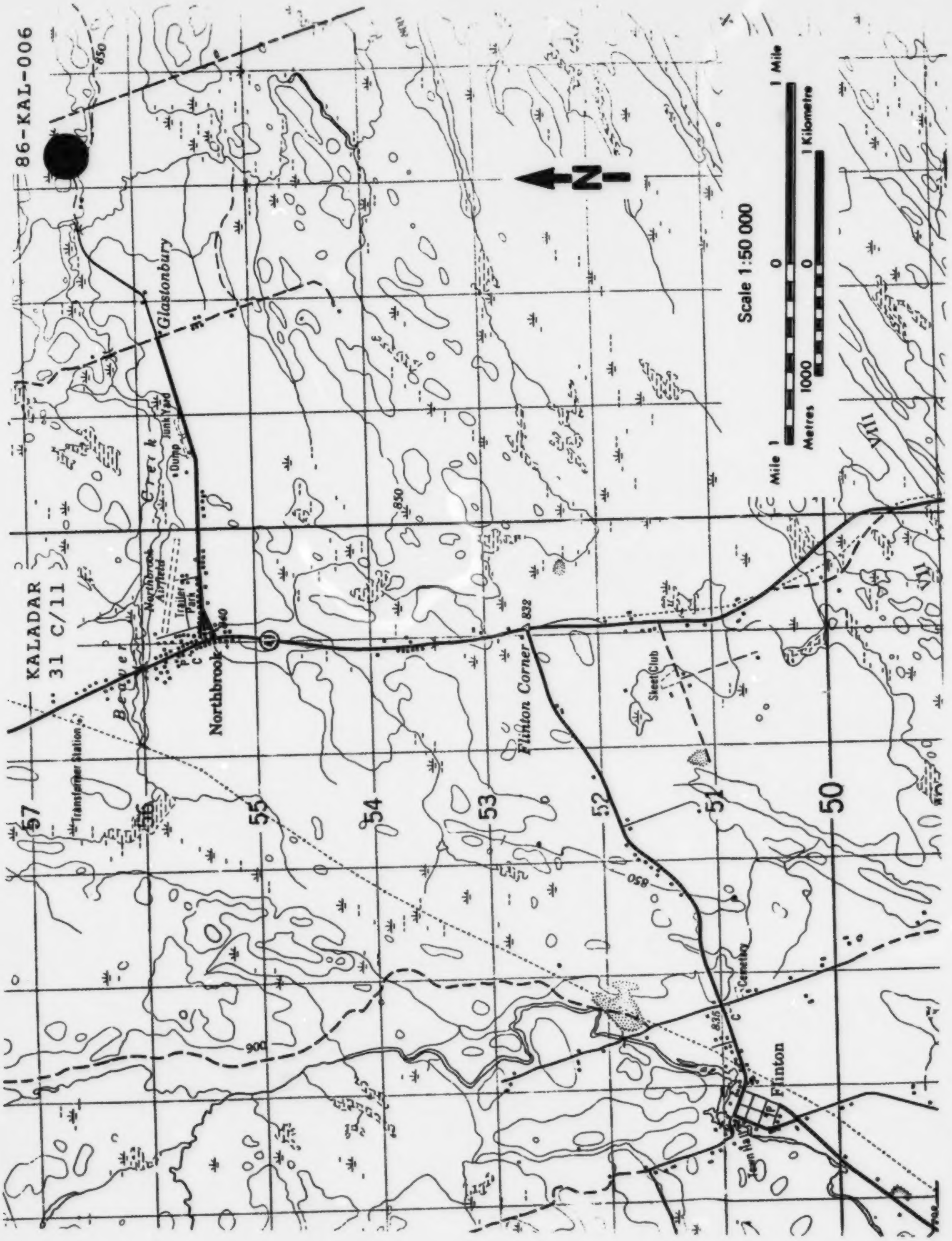
86-KAL-006
KALADAR
31 C/11
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Glastonbury
Beaver Creek
Junk Yard
Dump
Northbrook Airfield
Trailer Park
Northbrook
Transformer Station
Flinton Corner
Skeet Club
Cemetery
Flinton
Town Hall
850
900
832
835
41
VII
VIII
57
56
55
54
53
52
51
50

Figure B33. Sample location, Northbrook batholith (sheet 2).

86-KAL-006

PROPERTY NO. 86-KAL-006 PLUTON NAME Northbrook Batholith

PROPERTY NAME Northbrooke 54 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Quartz Monzonite to Biotite Granite

TOWNSHIP Kaladar LOT 26 CONC. 11

NTS 31 C/11 UTM CO-ORDINATES Easting 333300 Northing 4956600

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4452-157-54

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brown/Black
Weathered Surface Dull Grey
Uniform X Variable

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 50 degrees Dip 70 degrees west

Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

A)	Strike	Horizontal	Dip		Spacing	0.5 m
B)	Strike		Dip		Spacing	
C)	Strike		Dip		Spacing	
D)	Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Pegmatite dike 1 m wide striking at 160 degrees, some quartz veins.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a medium-grained, strongly foliated, brownish coloured granitic rock. Intense irregular jointing, quartz veins and pegmatite dikes are present at this location.

Photo B51. View of outcrop depicting a number of 1 m benches. 86-KAL-006

Photo B52. View of outcrop showing vertical and horizontal jointing. 86-KAL-006

86-KEN-001

PROPERTY NO. 86-KEN-001   PLUTON NAME Northbrook Batholith

PROPERTY NAME Skink Hill   COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Kennebec   LOT 20   CONC. 3

NTS 31 C/11   UTM CO-ORDINATES Easting 338200   Northing 4953900

PROPERTY STATUS Prospect   AIR PHOTO NO. 78-4451 143-89

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes   No X   Type

COLOUR Fresh Surface Pink to black and pink
Weathered Surface Pink with grey
Uniform   Variable X

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium   Uniform X   Variable

TEXTURE Gneissic   Uniform   Variable X

FABRIC Yes X   No.   Weak   Mod.   Strong   Strike 60%
Dip ?

Formed By Gneissic banding

BEDDING Yes   No X   Strike   Dip   Avg. Thickness

JOINTING Regular Pattern X   Irregular Pattern X
Limited Jointing   Moderate Jointing X   Intensive Jointing
A) Strike horizontal   Dip   Spacing 1 m
B) Strike 140 degrees   Dip 90 degrees   Spacing 1 to 4 m varying
C) Strike 55 degrees   Dip 90 degrees   Spacing 5 m
D) Strike   Dip   Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes   No X   Type   Percent

OTHER FEATURES Quartz veins 2 cm thick dipping at 16 degrees east striking at 75 degrees - aplite pods, pegmatitic veining.

POSSIBLE USES Small quarry blocks for monumental stone, curbing, landscaping, crushed stone, ashlar

OUTCROP EXPOSURE Good X   Fair   Poor

COMMENTS This rock is a medium-grained, pink to pink and black gneissic quartz monzonite. The outcrop exposure at this site is extensive and jointing is limited in local areas. There are some pegmatitic and aplite pods. Horizontal sheeting varies in thickness from 0.3 to 1 m. This area shows some potential for quarry block extraction.

86-KEN-002

PROPERTY NO. 86-KEN-002 PLUTON NAME Northbrook Batholith

PROPERTY NAME Bordenwood Road COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz monzonite

TOWNSHIP Kennebec LOT 21 CONC. 3

NTS 31 C/11 UTM CO-ORDINATES Easting 338600 Northing 4954800

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4451-143-89

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish red
Weathered Surface Pink with grey
Uniform Variable X

WEATHERING DEPTH 4 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 60 degrees
Dip ?
Formed By Gneissic layering

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X to Intensive Jointing X

	Strike		Dip		Spacing
A)	Strike	140 degrees	Dip	?	Spacing	0.5 to 6 m avg. 1 m
B)	Strike	30 degrees	Dip	?	Spacing	3 m
C)	Strike	horizontal	Dip	0 degrees	Spacing	0.5 m
D)	Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Fair to poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES 0.5 m sheeting, granitic stringers and pegmatite dikes (0.5 m).

POSSIBLE USES Ashlar, crushed stone, landscaping stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, pinkish-red gneissic quartz monzonite. The colour varies slightly throughout the outcrop. Joint intensity and horizontal sheeting will restrict potential quarry block sizes. The strong foliation (gneissosity) of this rock may make it particularly suitable for split stone applications.

86-KEN-003

PROPERTY NO. 86-KEN-003 **PLUTON NAME** Northbrook Batholith

PROPERTY NAME Dean Creek **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Quartz Monzonite

TOWNSHIP Kennebec **LOT** 21 **CONC.** 3

NTS 31 C/11 **UTM CO-ORDINATES** Easting 338400 Northing 4954700

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4451-143-89

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Light pink
Weathered Surface Pinkish
Uniform X Variable

WEATHERING DEPTH 0.5 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Gneissic Uniform Variable X

FABRIC Yes X No. Weak Mod. Strong X Strike 40 degrees
Dip

Formed By Gneissic layering

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X to Intensive Jointing X
A) Strike 140 degrees Dip vertical Spacing 1 to 10 m
B) Strike 30 degrees Dip vertical Spacing 2 to 3 m
C) Strike 60 degrees Dip 65 degrees E Spacing 0.5 m
D) Strike 185 degrees Dip vertical Spacing 0.5 to 1 m
E) Strike horizontal Dip 0 degrees Spacing 0.5 to 1.5 m

POTENTIAL FOR QUARRY BLOCKS Poor to fair

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz pods and veins (1 to 10 cm wide), stringers, pegmatite dikes (up to 1 m) moderate exfoliation.

POSSIBLE USES Ashlar, crushed stone, small quarry blocks

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This is a medium-grained, light pink, gneissic quartz monzonite. Many quartz stringers and pods, ranging from 1 to 10 cm wide are present in this outcrop. Pegmatitic and aplitic pods are also present. Both regular and irregular, moderate to intense joint patterns are apparent. Horizontal joint spacing ranges from about 0.5 to 1.5 m.

Photo B53. Good outcrop exposure along with moderate to intense jointing. 86-KEN-003

Photo B54. Good outcrop exposure along with moderate to intense jointing. 86-KEN-003

86-KEN-004

PROPERTY NO. 86-KEN-004 PLUTON NAME Northbrook Batholith

PROPERTY NAME Beaver Creek COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Quartz monzonite

TOWNSHIP Kennebec LOT 21 CONC. 2

NTS 31 C/11 UTM CO-ORDINATES Easting 337500 Northing 4954400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4451-143-86

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Greyish pink
Uniform X Variable

WEATHERING DEPTH 0.2 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 55 degrees
Dip 25 degrees S
Formed By Gneissic layering

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X

A) Strike	140 degrees	Dip	Vertical	Spacing	0.7 to 2 m
B) Strike	180 degrees	Dip	Vertical	Spacing	up to 3 m
C) Strike	horizontal	Dip	0 degrees	Spacing	0.2 to 1.5 m
D) Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Fair to poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz stringers and veins, some pegmatitic and aplite pods, severe degree of exfoliation.

POSSIBLE USES Ashlar, crushed stone, landscaping stone, small quarry blocks.

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium grained, pink, gneissic quartz monzonite. The texture is fairly uniform over the area, with only a small degree of variability. The rock contains a large number of quartz stringers, usually 1 to 5 cm in width. Much of the outcrop area shows extensive exfoliation. The jointing is moderate to intense. Some small quarry blocks may be extractable.

86-KEN-005

PROPERTY NO. 86-KEN-005 PLUTON NAME Northbrook Batholith

PROPERTY NAME Bordenwood Cemetery COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Quartz Monzonite

TOWNSHIP Kennebec LOT 22 CONC. 4

NTS 31 C/11 UTM CO-ORDINATES Easting 339550 Northing 4955600

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4452-157-54

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink-Grey
Uniform X Variable

WEATHERING DEPTH <1 cm

GRAIN SIZE Medium to fine Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 45 degrees
Dip 5 degrees S
Formed By Gneissic banding

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 140 degrees Dip vertical Spacing 0.5 to 2 m
B) Strike 20 degrees Dip vertical Spacing 0.7 to 3 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins (1 to 4 cm wide); aplite pods, granitic stringers.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a gneissic, pink quartz monzonite with a medium to fine grain size. Jointing is intensive in both regular and irregular patterns. There are numerous granitic stringers, quartz veins, and aplitic pods present at this location.

86-KEN-006

PROPERTY NO. 86-KEN-006 **PLUTON NAME** Northbrook Batholith

PROPERTY NAME Henderson Road **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Biotite Quartz Monzonite

TOWNSHIP Kennebec **LOT** 23 **CONC.** 4

NTS 31 C/11 **UTM CO-ORDINATES** Easting 339000 Northing 4956800

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4452-157-60

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Greyish with pink spots
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 0.2 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 60 degrees
Dip ?

Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 065 degrees Dip Spacing 0.2 to 1 m
B) Strike 140 degrees Dip Spacing 0.3 to 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Pegmatite dikes (up to 2 m wide), small granitic stringers

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a medium-grained, moderately foliated, grey biotite quartz monzonite. Pegmatite dikes, aplite dikes and pods, and quartz stringers are present. There is intense jointing. Horizontal sheeting is wide spread and closely spaced.

RIDEAU LAKE PLUTON

LOCATION North shore of Rideau Lake, mostly within North Burgess Township

NTS 31 C/9 OGS Map 2054 GSC Map 1182A GSC Memoir 346

SAMPLE SITES 86-NBURG-001, 86-NBURG-002, 86-NBURG-003, 86-NBURG-004, 86-NBURG-005

DESCRIPTION OF AREA

The Rideau Lake Pluton is located on the north shore of Rideau Lake and is situated east of the Westport and Wolf Lake plutons.

The rock found in the area is pinkish brown and massive to slightly foliated with predominantly irregular and intense jointing. Major mineral constituents are K-spar, plagioclase, biotite and quartz. Many deleterious features were seen throughout the outcrops visited. These include pegmatite dikes, quartz veins and pods, aplite dikes, and mafic inclusions.

The best site seen in this intrusion is 86-NBURG-005. Outcrop exposure is poor. Jointing is locally moderate, but some areas display intense horizontal sheeting.

CONCLUSIONS

Based on the site examinations, the area appears to have low potential for building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-NBURG-001		
86-NBURG-002		
86-NBURG-003		
86-NBURG-004		
86-NBURG-005		

REFERENCES

Davidson, A., Britton, J.M., Bell, K. and Blendinsop, J. 1979. Regional synthesis of the Grenville Province of Ontario and western Quebec; in Current Research, Part B, Geological Survey of Canada, Paper 79-1B, p.153-262.

Hewitt, D.F. 1964. Geological notes for Maps Nos. 2053 and 2054, Madoc-Gananoque area, NTS 31B/5 + 12, 31C, Ontario; Ontario Department of Mines, Geological Circular 12, 33p.

Wynne-Edwards, H.R. 1967. Westport map-area, Ontario; Geological Survey of Canada, Memoir 346.

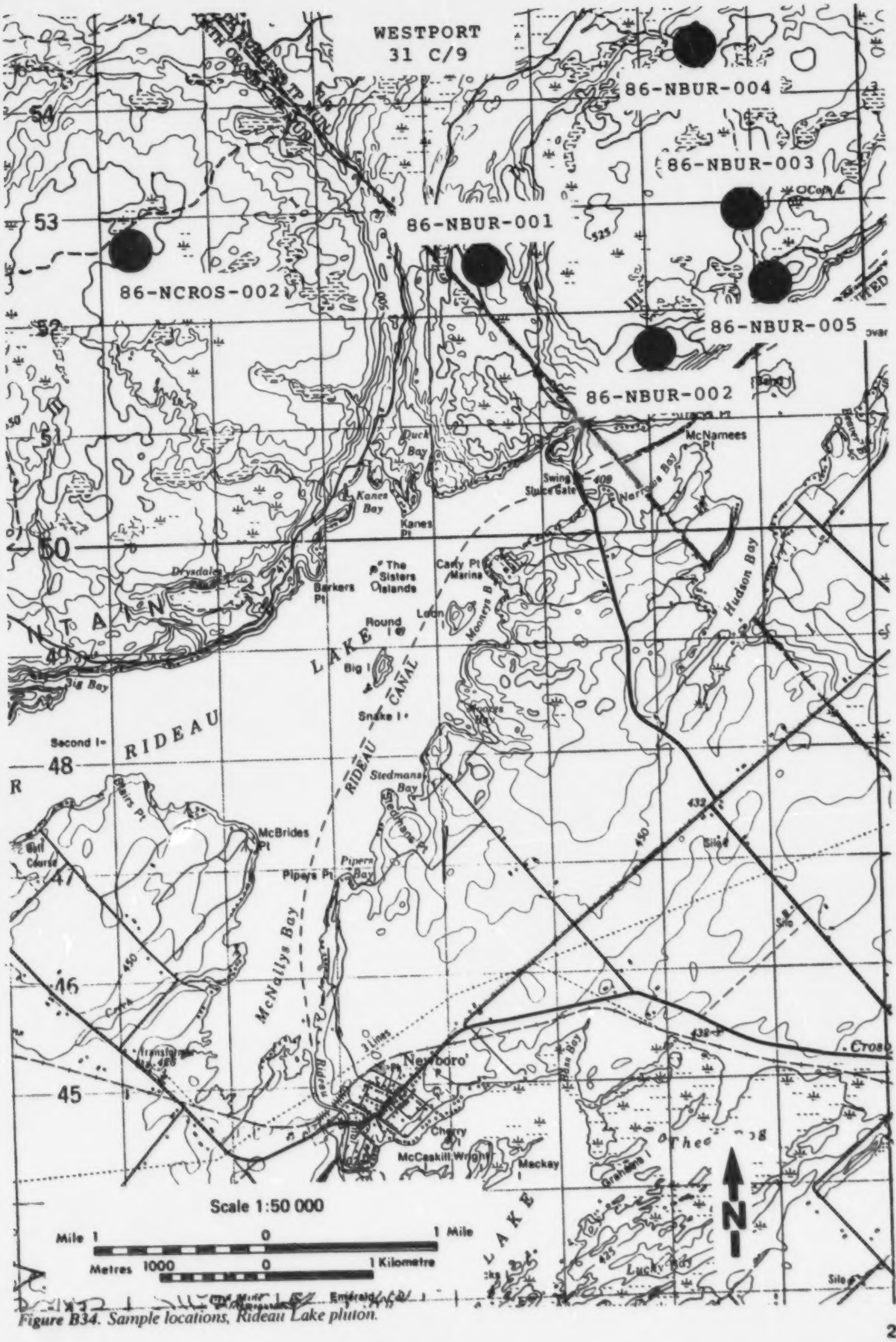
WESTPORT
31 C/9
86-NBUR-004
86-NBUR-003
86-NBUR-001
86-NCROS-002
86-NBUR-005
86-NBUR-002
54
53
52
51
50
49
48
47
46
45
Duck Bay
Kanes Bay
Kanes Pt
McNamees Pt
Swing Sluice Gate
Narrows Bay
Hudson Bay
The Sisters Islands
Barkers Pt
Carty Pt Marina
Loon
Mooneys B
Round I
Big I
Snake I
Second I
RIDEAU
LAKE
RIDEAU CANAL
Drysdale
Big Bay
Stedmans Bay
Pipers Pt
Pipers Bay
McBrides Pt
Golf Course
McNallys Bay
Newboro'
Cherry
McCaskill Wright
Mackay
Grahams
Lucky Bay
Silo
Cross
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B34. Sample locations, Rideau Lake pluton.

86-NBUR-001

PROPERTY NO. 86-NBUR-001 PLUTON NAME Rideau Lake Complex

PROPERTY NAME The Narrows COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP North Burgess LOT 26 CONC. 4

NTS 31 C/9 UTM CO-ORDINATES Easting 396500 Northing 4952450

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450-131-86

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Brownish orange
Weathered Surface Grey to black
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Foliated Uniform Variable

FABRIC Yes No. Weak Mod. X Strong Strike Dip
Formed By Alignment of the biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite; Mafic content: approx. 30%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Biotite content (20 to 30%), quartz veins, mafic inclusions, pegmatitic and aplite dikes, quartz pods.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This is a brownish-orange biotite-granite which is extensively weathered. Along the 100 m outcrop, aplite dikes, quartz veins, pegmatite and mafic inclusions were observed. The high biotite content limits the potential of this rock for building stone development. The horizontal sheeting is less than 10 cm over much of this site.

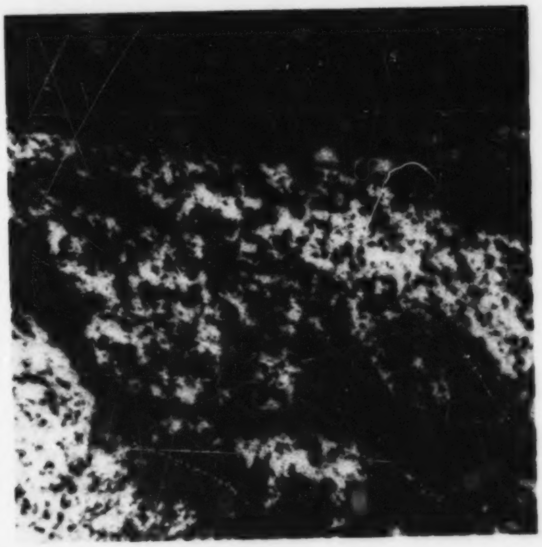

Photo B55. Fresh surface of granite, exhibiting high biotite content. 86-NBUR-001

86-NBUR-002

PROPERTY NO. 86-NBUR-002 PLUTON NAME Rideau Lake Complex

PROPERTY NAME Tracy's Point COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP North Burgess LOT 25 CONC. 3

NTS 31 C/9 UTM CO-ORDINATES Easting 398050 Northing 4951700

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450-131-86

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 mm

GRAIN SIZE Coarse Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes No. Weak X Mod. Strong Strike Dip
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 105 degrees Dip 90 degrees Spacing 0.2 to 1 m
B) Strike 40 degrees Dip 90 degrees Spacing 0.2 to 0.5 m
C) Strike Horizontal Dip Spacing 0.1 to 0.5 m
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite; Mafic content: approx. 25%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare quartz veining

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This site contains low rounded ridges of pink, coarse syenite. The rock is weakly foliated. The coarse biotite crystals, which comprise approximately 25% of the rock, may tend to be plucked during cutting and polishing. A feature of this site which further diminishes its building stone potential is the intensive jointing.

86-NBUR-003

PROPERTY NO. 86-NBUR-003 PLUTON NAME Rideau Lake Complex

PROPERTY NAME Coin Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP North Burgess LOT 22 CONC. 3

NTS 31 C/9 UTM CO-ORDINATES Easting 398900 Northing 4952950

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4451-143-156

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink-grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

A)	Strike	Horizontal	Dip		Spacing 0.1 to 0.5 m
B)	Strike	70 degrees	Dip	90 degrees	Spacing 0.1 to 0.5 m
C)	Strike		Dip		Spacing
D)	Strike		Dip		Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, amphibole, (quartz, sphene); Mafic content: approx. 10 to 15%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Intense horizontal sheeting (0.1 to 0.5 m spacing), surficial weathering.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a pink, massive, medium-grained syenite of the Rideau Lake complex. Surficial weathering and the intense jointing (predominantly of an irregular nature) limit building stone potential.

876-NBUR-004

PROPERTY NO. 86-NBUR-004 PLUTON NAME Rideau Lake Complex

PROPERTY NAME Black Creek COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP North Burgess LOT 21 CONC. 4

NTS 31 C/9 UTM CO-ORDINATES Easting 398500 Northing 4954450

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450-131-88

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Red
Weathered Surface Pinkish red
Uniform X Variable

WEATHERING DEPTH

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite; Mafic content: approx. 30%

DELETERIOUS MINERALS Yes X No Type Specularite Percent Trace

OTHER FEATURES Alteration of mafics.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS The outstanding feature of this medium-grained, massive syenite is the deep red colour of the feldspars. Alteration of the mafic component and the intense irregular jointing found in this area limit the building stone potential. Nevertheless, owing to its deep red colour, this rock may have some use in the building stone industry.

86-NBUR-005

PROPERTY NO. 86-NBUR-005 PLUTON NAME Rideau Lake Complex

PROPERTY NAME SW of Sand Island COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP North Burgess LOT 23 CONC. 3

NTS 31 C/9 UTM CO-ORDINATES Easting 399150 Northing 4952250

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450-131-88

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X to Intensive Jointing X
A) Strike 108 degrees Dip 90 degrees Spacing 0.5 to 1.5 m
B) Strike 80 degrees Dip 90 degrees Spacing 0.5 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite; Mafic content: approx. 20 to 25%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins, aplite dikes, slight mafic alteration

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This outcrop contains a medium-grained, moderately foliated, pink syenite that is uniform in colour and texture. Jointing occurs in regular and irregular vertical sets, generally with moderate intensity. The presence of biotite crystals (approximately 20% of the rock, 2 to 5 mm in size) will limit this rock's ability to take a polish. Other deleterious features include quartz veins, aplite dikes and poor exposure.

SKOOTAMATTA LAKE AREA

LOCATION Central Anglesea Township

NTS 31 C/14 OGS Map 2053 Geological Report AR 21, pt.4

SAMPLE SITES 86-ANG-001, 86-ANG-002, 86-ANG-003, 86-GRI-006, 86-GRI-007

DESCRIPTION OF AREA

The Skootamatta Lake area is composed of an area of pink granites and syenites, mafic intrusives and the extreme southern portion of the Weslemkoon granite. The Weslemkoon granite portion is located to the west of Skootamatta Lake in Grimsthorpe Township.

Two samples were taken from the pink granites, 86-ANG-001, 002. Outcrop exposure in the area is very poor and good sites for evaluation are difficult to find. The rock found here is a massive, medium- to coarse-grained pink granite. Both regular and irregular jointing is common and tends to be very intensive. At 86-ANG-001, horizontal jointing was seen to be within a range of 0.1 to 0.5 m. While the rock is fairly attractive, deleterious features such as the jointing and presence of aplite dikes appear to make this area one of low building stone potential.

The area of mafic intrusion is to the north, west and southeast of the lake. One sample was taken from this area (86-ANG-003). This rock appears to be gabbroic anorthosite and is quite attractive, with a violet hue on the fresh surface. The rock is massive, medium to coarse grained and outcrop exposure is quite good.

Close examination of the rock revealed the presence of sulphides, probably pyrite.

Only one major joint set could be identified, striking about 140 degrees with a vertical dip. Spacing of the joints is from 0.5 to 1.0 m. The jointing, sulphide content, and fine stringers of quartz found throughout the area limit the potential for building stone.

Farther to the west, two samples were taken in the extreme southern part of the Weslemkoon granite. Both are massive, medium-grained, grey granite with a salt and pepper appearance on the fresh surface.

Jointing in both areas is regular but fairly intensive with spacing up to about 1.5 m and dipping vertically. Sulphides were noticed at 86-GRI-006 but not at 86-GRI-007. Quartz veining was noticed at both sites but 86-GRI-007 contained pegmatite dikes, aplite pods and some mafic inclusions. Because of the above mentioned features this area shows little potential for building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-ANG-001 86-ANG-002 86-ANG-003 86-GRI-006 86-GRI-007		

REFERENCES

Davidson, A., Britton, J.M., Bell, K. and Blenkinsop, J. 1979. Regional synthesis of the Grenville Province of Ontario and western Quebec; in Current Research, Part B, Geological Survey of Canada, Paper 79-1B, p.153-262.

Meen, V.B. 1944. Geology of the Grimsthorpe-Barrie area, Hastings, Lennox and Addington, and Frontenac counties, Ontario; Ontario Department of Mines, Annual Report, 1942, v.51, pt.4, p.1-50.

Wahl, W.G. 1960. An interpretive technique for delimiting mineral potential areas based on the magnetic susceptibility of source rocks; Proceedings of the 21st International Geological Congress, pt.2, p.200-215.

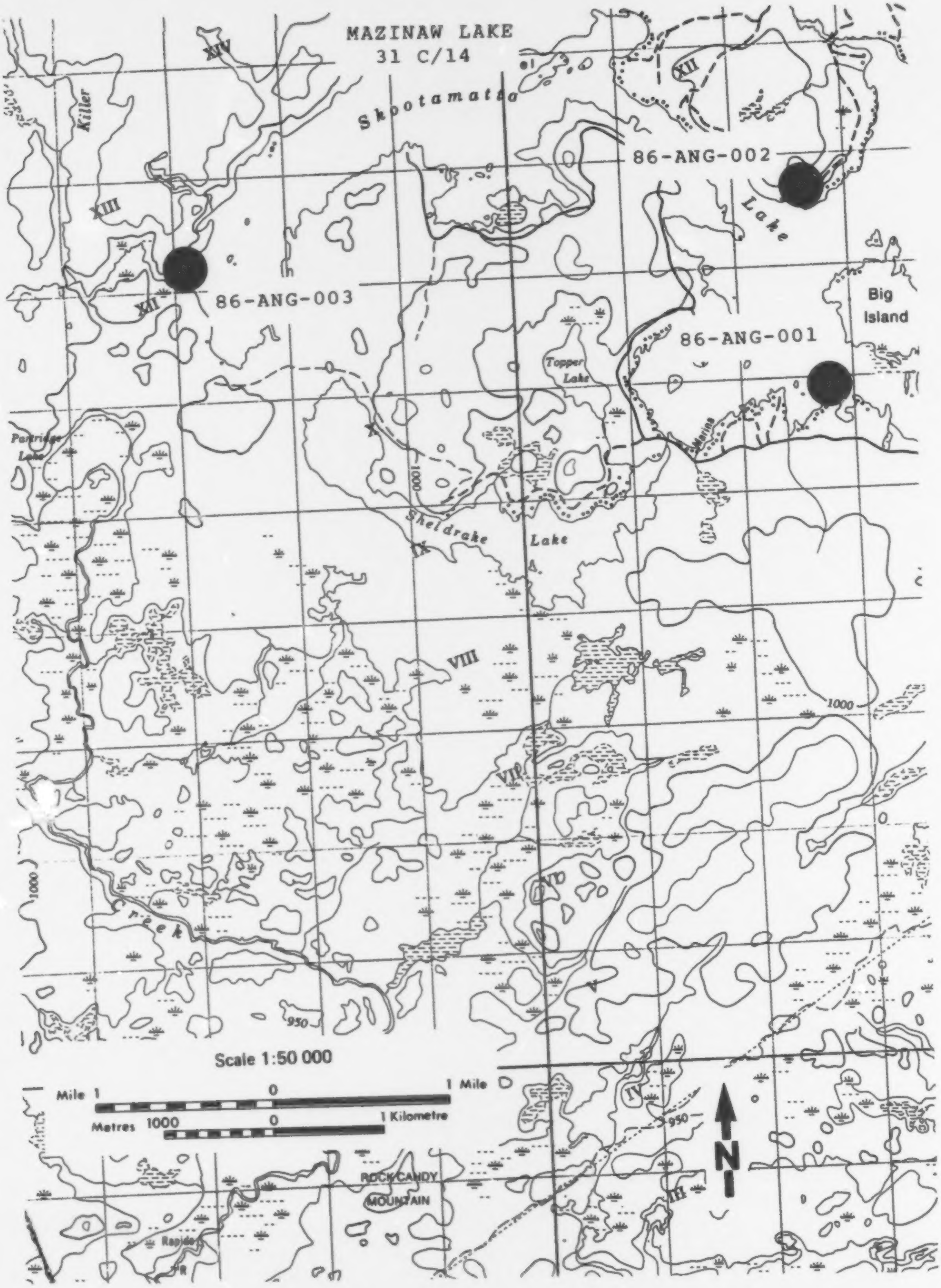
MAZINAW LAKE
31 C/14
Skootamatta
Lake
Killer
Big Island
Topper Lake
Partridge Lake
Sheldrake Lake
Creek
86-ANG-001
86-ANG-002
86-ANG-003
XIV
XIII
XII
X
IX
VIII
VII
VI
V
IV
III
1000
950
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
ROCK CANDY MOUNTAIN
Rapids

Figure B35. Sample locations, Skootamatta Lake area (sheet 1).

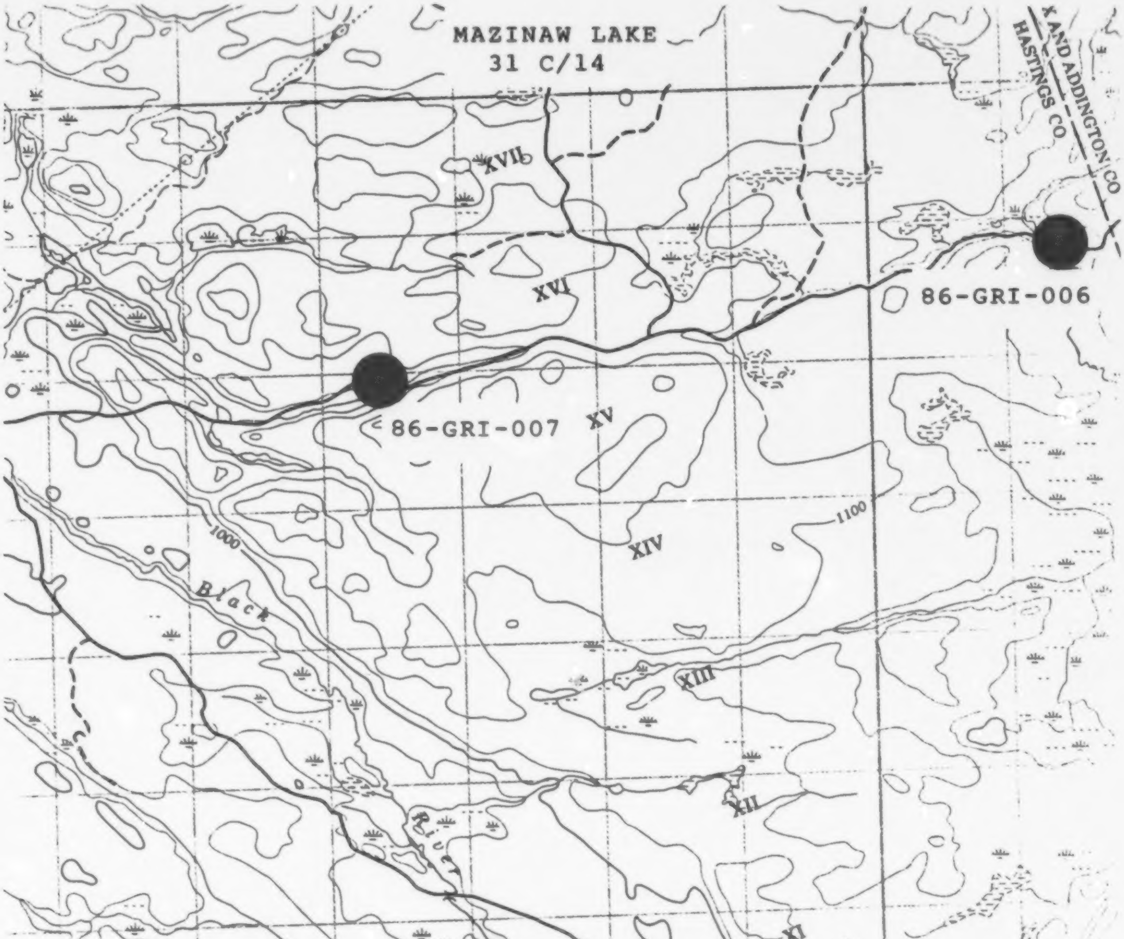
MAZINAW LAKE
31 C/14
X AND ADDINGTON CO
HASTINGS CO
86-GRI-006
86-GRI-007
XVII
XVI
XV
XIV
XIII
XII
XI
X
IX
VIII
1000
1100
1050
Black River
Position Approximate
14
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N

Figure B36. Sample locations, Skootamatta Lake area (sheet 2).

86-ANG-001

PROPERTY NO. 86-ANG-001
PLUTON NAME Skootamatta Lake Granite

PROPERTY NAME Skootamatta Lake #1
COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Anglesea
LOT 11
CONC. 9

NTS 31 C/14
UTM CO-ORDINATES Easting 322800 Northing 4965900

PROPERTY STATUS Prospect
AIR PHOTO NO. 78-4458-189-121

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink with black
Weathered Surface Pink-grey
Uniform X Variable

WEATHERING DEPTH 1 to 2 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X to

	Strike	Dip	Spacing
A)	Horizontal		0.1 to 0.5 m
B)	150 degrees	Vertical	1.5 m
C)			
D)			

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz; Mafic content: approx. 30%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Coarse biotite crystals (max. 5 mm dia.), exfoliation horizontal jointing (extensive), rare aplite dikes observed (2 cm wide).

POSSIBLE USES Ashlar, paving stone, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This sample is a massive, medium-grained, pink granite which contains some coarse biotite crystals. Biotite comprises approximately 30% of the rock; this may reduce the ability of the rock to take a polish. Furthermore, outcrop exposure is poor and horizontal jointing is extensive. A regular vertical joint set strikes at 150 degrees and has a spacing of approximately 1.5 m. The presence of an aplite dike is another deleterious feature which limits building stone potential in this area.

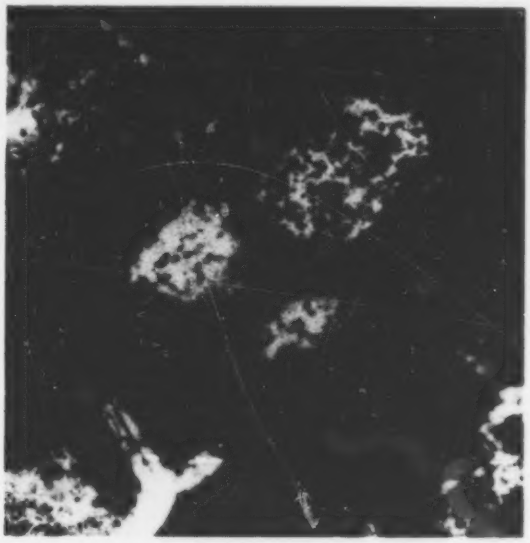

Photo B56. Close-up of pink-grey granite. 86-ANG-001

86-ANG-002

PROPERTY NO. 86-ANG-002 PLUTON NAME Skootamatta Lake Granite

PROPERTY NAME Skootamatta 2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Syenite

TOWNSHIP Anglesea LOT 10 CONC. 11

NTS 31 C/14 UTM CO-ORDINATES Easting 322800 Northing 4967800

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4459-190-72

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Red
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Aplite dike, major weathering - blocks falling off.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a red, massive syenite. The nature and intensity of jointing, inconsistent grain size, and poor outcrop exposure diminish the building stone potential of this area. Other deleterious features include aplite dikes and extensive weathering.

86-ANG-003

PROPERTY NO. 86-ANG-003 PLUTON NAME Skootamatta Lake Granite

PROPERTY NAME Killer Creek COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbroic Anorthosite

TOWNSHIP Anglesea LOT 23 CONC. 12

NTS 31 C/14 UTM CO-ORDINATES Easting 317100 Northing 4967300

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4458-189-116

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Violet black
Weathered Surface Dark grey to black
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Medium to coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 140 degrees Dip near vertical Spacing 0.5 to 1 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, amphibole; Mafic content: approx. 40%

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Stringers of quartz, amphibole alteration.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS The rock at this site is a medium- to coarse-grained, violet-black, gabbroic anorthosite. The amphibole has been somewhat altered. The texture is massive and jointing is irregular and intense. Quartz stringers were also observed in this rock. These factors diminish the building stone potential of this area.

86-GRI-006

PROPERTY NO. 86-GRI-006 **PLUTON NAME** Weslemkoom Granite, Skootamatta Lake Area

PROPERTY NAME Partridge Creek **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Grimsthorpe **LOT** 3 **CONC.** 15

NTS 31 C/14 **UTM CO-ORDINATES** Easting 311400 Northing 4968750

PROPERTY STATUS Prospect **AIR PHOTO NO.**

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Salt and pepper
Weathered Surface Pinkish grey to black
Uniform X Variable

WEATHERING DEPTH 1 to 2 m

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X toIntensive Jointing X
A) Strike 60 degrees Dip Vertical Spacing 0.5 m to 1.5 m
B) Strike 140 degrees Dip Vertical Spacing 0.1 m to 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite; Mafic Content: approx. 15 to 20%

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Quartz veins, minor feldspar alteration.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This sample is a massive, medium-grained granite which has a salt and pepper appearance. Jointing is moderate to intensive and occurs in regular joint sets. Other deleterious features include the presence of quartz veins and sulphides. Outcrop exposure is very good.

86-GRI-007

PROPERTY NO. 86-GRI-007 PLUTON NAME Weslemkoom Granite, Skootamatta Lake Area

PROPERTY NAME N.E. Black River COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Grimsthorpe LOT 14 CONC. 16

NTS 31 C/14 UTM CO-ORDINATES Easting 306400 Northing 4967900

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Salt and pepper to pink salt and pepper
Weathered Surface Grey
Uniform Variable X

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 160 degrees Dip Vertical Spacing Up to 1 m
B) Strike 110 degrees Dip Vertical Spacing Up to 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite; Mafic content: approx. 20 to 25%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Pegmatite dike, quartz veining, aplite pods, mafic inclusions, rare feldspar megacrysts.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This is a massive, medium-grained granite. The colour of this rock varies from a salt and pepper to a pink black and white colour across the outcrop. Rare feldspar megacrysts are present. Jointing is intense and regular. Other deleterious features observed include aplite pods, pegmatite dikes, quartz veins and mafic inclusions.

TAMWORTH, BELLROCK, WILKINSON, FIRST DEPOT MAFIC INTRUSIONS

LOCATION Camden East, Portland, Hinchinbrooke

NTS 31 C/7 OGS Map 2053

SAMPLE SITES 86-CAM-001, 86-POR-001, 86-POR-002, 86-POR-003, 86-POR-004, 86-HIN-001

DESCRIPTION OF AREA
The rocks found in these mafic intrusions include diorite, gabbro, anorthosite, metagabbro and amphibolite.

The first site visited was the Tamworth mafic intrusion just south of the town of Tamworth. The rock found here is a fine- to medium-grained, massive dark grey rock. The jointing in the area is irregular and intense thereby diminishing any building stone potential. Other features found in the area include quartz stringers and pods and black blotches of weathered material that occur commonly throughout the outcrop.

The second intrusion visited was the Bellrock mafic intrusion in Portland Township. The rock found here was anorthositic in composition but not very fresh and also showed significant surface weathering. The jointing seen in the area was both regular and irregular and moderate in intensity with a 1 m spacing, dipping vertically along a 120 strike. The grain size is medium to coarse, the texture is massive, and the rock appears fairly attractive. Some quartz veins and pyrite were seen throughout the outcrops. This area should be further investigated. 86-POR-003 seems to show the most potential. The First Depot Lake mafic intrusion seems to show very little potential. Outcrop exposure is very poor and most outcrops exhibit intense, irregular jointing. The rock is a massive, medium-grained gabbro. The area is surrounded by foliated felsic rocks.

The Wilkinson anorthosite intrusion in Hinchinbrooke Township is a dark greyish-black, massive, coarse-grained, porphyritic rock that is quite attractive. The jointing in the area is both regular and irregular and is generally quite intensive. This area is a very good example of an anorthosite and shows very large plagioclase crystals. One crystal measured 14 by 23 cm. The plagioclase crystals are not fresh and appear to be saussuritized. The area also displays some mafic xenoliths and moderately abundant granitic and quartz stringers. Due to the above factors, this area is deemed to have poor to moderate potential.

POTENTIAL

POOR		MODERATE	GOOD
	86-HIN-001		
86-CAM-001			
86-POR-001			
86-POR-002			
86-POR-003			
86-POR-004			

REFERENCES

Harrison, J.M. 1944. Anorthosites in southeastern Ontario, Canada; Geological Society of America, Bulletin, v.55, pt.2, p.1401-1430.

MacDonald, G. 1970. Geology-Kingston area; Department of Geology, Carleton University, 1968-70.

Harding, W.D. 1951. Geology of the Olden-Bedford area; Ontario Department of Mines, Annual Report, 1947, v.56, pt.6, 100p.

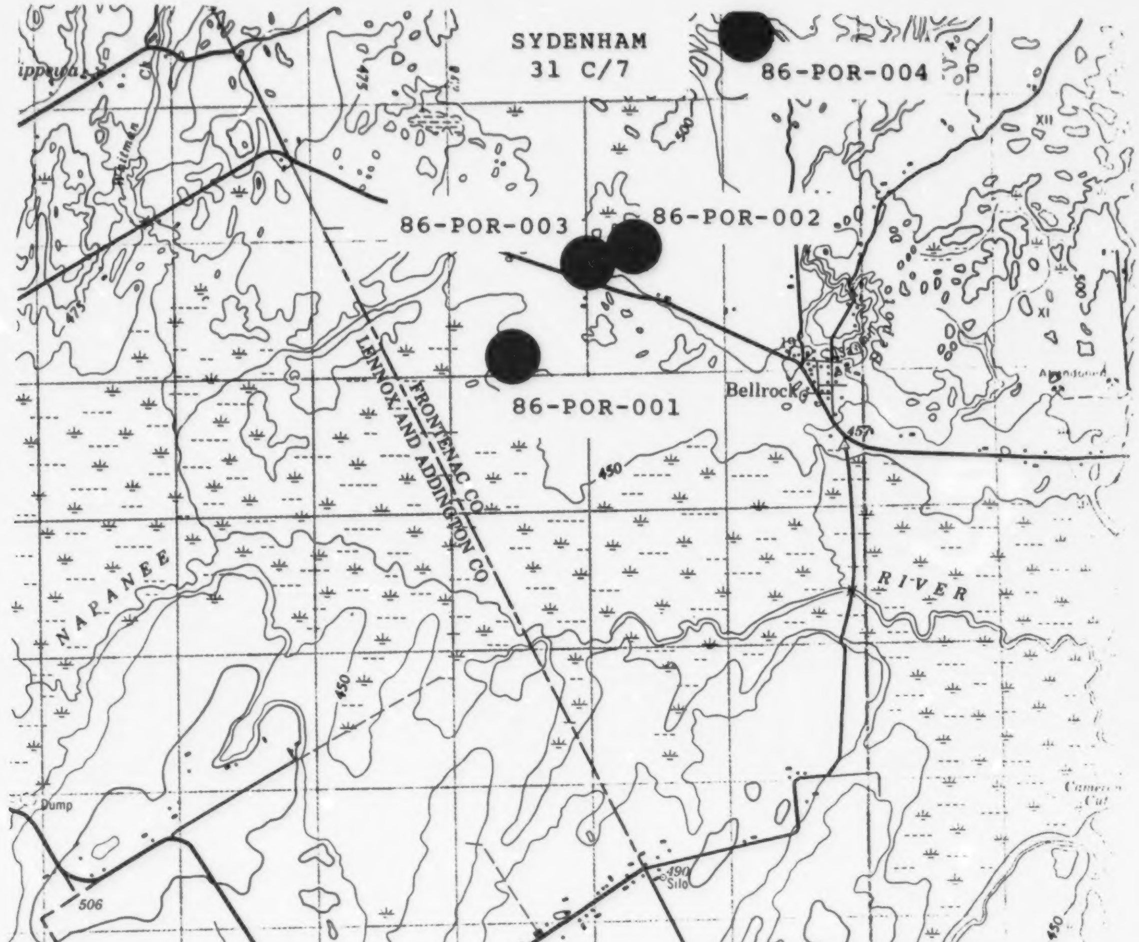
SYDENHAM
31 C/7
86-POR-004
86-POR-003
86-POR-002
86-POR-001
Bellrock
FRONTENAC CO
LENNOX AND ADDINGTON CO
NAPANEE
RIVER
PORTLAND TP MUN
CAMDEN TP MUN
Moscow
Petworth
Dump
Silo
Silos
Abandoned
450
475
500
506
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N

Figure B37. Sample locations, Tamworth, Bellrock, Wilkinson and First Depot mafic intrusions (sheet 1).

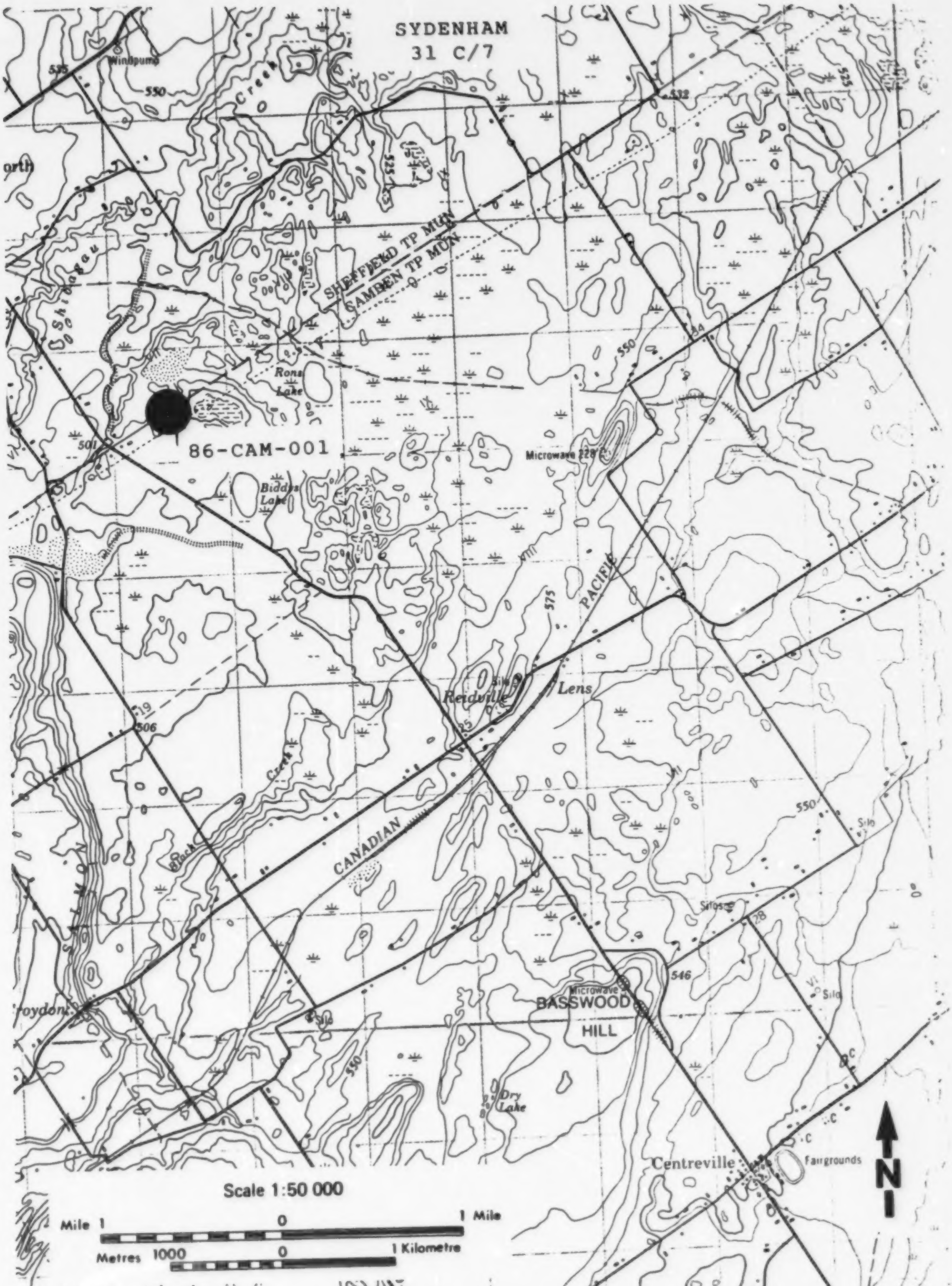
SYDENHAM
31 C/7
86-CAM-001
SHEFFIELD TP MUN
CAMDEN TP MUN
Rona Lake
Bidds Lake
Microwave
PACIFIC
CANADIAN
Reidville
Lens
BASSWOOD HILL
Dry Lake
Croydon
Centreville
Fairgrounds
Windpump
Creek
Black Creek
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B38. Sample location, Tamworth, Bellrock, Wilkinson and First Depot mafic intrusions (sheet 2).

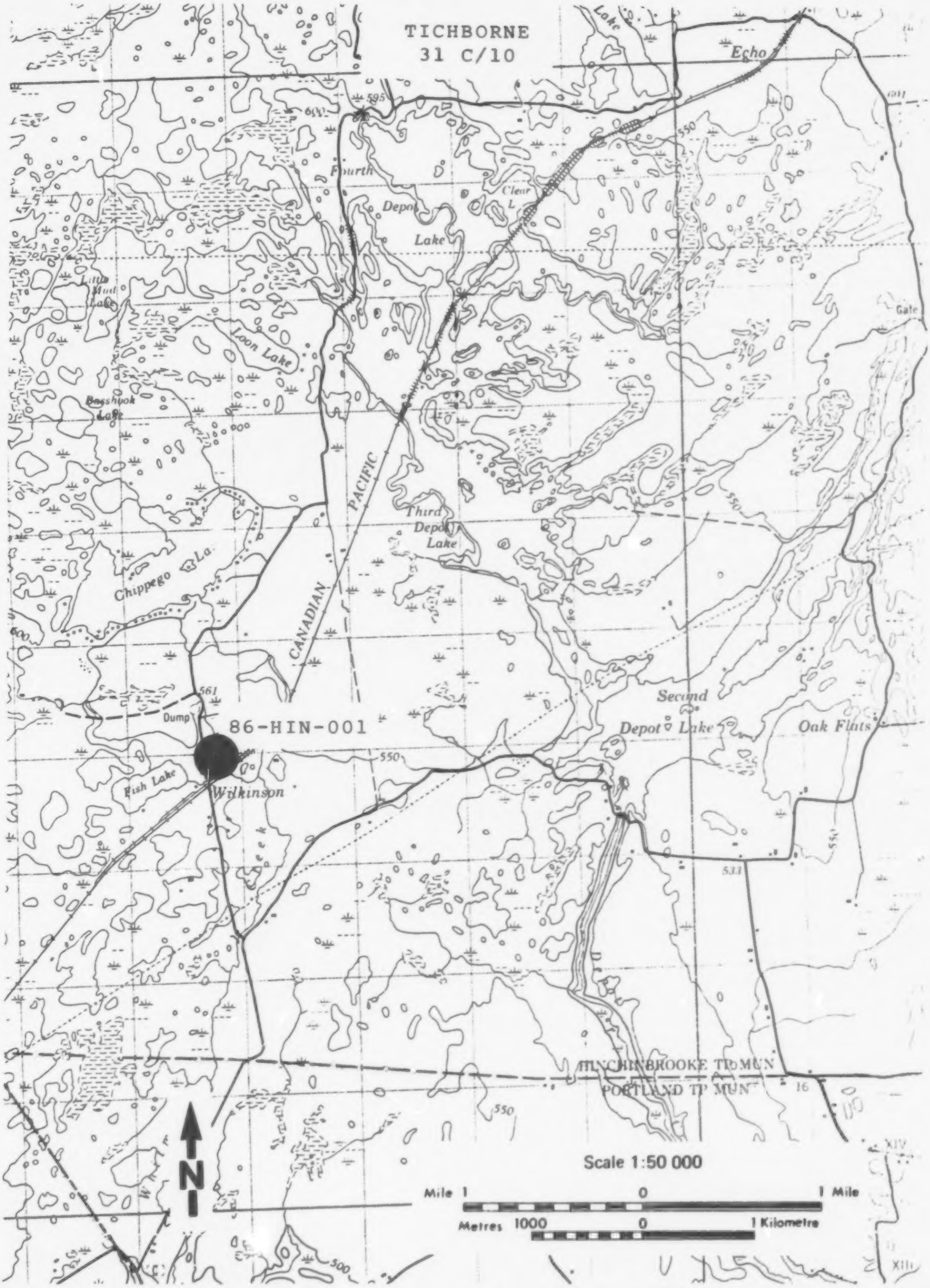
TICHBORNE
31 C/10
Echo
Lake
Fourth
Depot
Lake
Clear L
Little Mud Lake
Loon Lake
Basshook Lake
CANADIAN PACIFIC
Third Depot Lake
Chippego La
Gale
86-HIN-001
Dump
561
550
Fish Lake
Wilkinson
Second Depot Lake
Oak Flats
533
HINCHINBROOKE TP MUN
PORTLAND TP MUN
16
550
500
595
601
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
XIV
XIII

Figure B39. Sample location, Tamworth, Bellrock, Wilkinson and First Depot mafic intrusions (sheet 3).

86-CAM-001

PROPERTY NO. 86-CAM-001 PLUTON NAME Tamworth Mafic Intrusion

PROPERTY NAME Biddy's Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Diorite

TOWNSHIP Camden East LOT 23 CONC. 9

NTS 31 C/7 UTM CO-ORDINATES Easting 343500 Northing 4926400

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark grey
Weathered Surface Light grey
Uniform Variable X

WEATHERING DEPTH 2 to 8 mm

GRAIN SIZE Fine Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY 50 to 60% Mafic

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Black, fine-grained stringers

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a fine-grained dioritic rock. Outcrops are intensely weathered, intensely jointed, and contain numerous stringers, veins, and inclusions. Specularite coatings were also observed. These factors diminish the building stone potential of the rock at this site.

86-POR-001

PROPERTY NO. 86-POR-001 PLUTON NAME Bellrock Mafic Intrusion

PROPERTY NAME Bellrock COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Portland LOT 21,22 CONC. 11

NTS 31 C/7 UTM CO-ORDINATES Easting 357450 Northing 4926100

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark green
Weathered Surface Pink with grey
Uniform Variable X

WEATHERING DEPTH 8 mm

GRAIN SIZE Coarse Uniform Variable X

TEXTURE Massive Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 120 degrees Dip Vertical Spacing 4 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, biotite, minor pyroxene

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Chalcopyrite, biotite with hematite staining.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This sample is a dark green, coarse-grained anorthosite which has undergone intense alteration. The area contains regular and irregular joint patterns of moderate intensity. Granitic dikes are associated with one regular joint set. The presence of sulphides and coarse, hematite-stained biotite crystals further diminish building stone potential.

86-POR-002

PROPERTY NO. 86-POR-002 **PLUTON NAME** Bellrock Mafic Intrusion

PROPERTY NAME Bellrock 2 **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Portland **LOT** 21 **CONC.** 12

NTS 31 C/7 **UTM CO-ORDINATES** Easting 358300 Northing 4926900

PROPERTY STATUS Prospect **AIR PHOTO NO.**

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Light grey with light brown
Weathered Surface Pink-orange with grey
Uniform X Variable

WEATHERING DEPTH 2 to 5 mm

GRAIN SIZE Medium to coarse Uniform X Variable

TEXTURE Prophyritic Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike E-W Dip Vertical Spacing 0.7 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, feldspar, biotite

DELETERIOUS MINERALS Yes X No Type Biotite Percent 5%

OTHER FEATURES Hematite staining; limited, intense feldspar alteration.

POSSIBLE USES Ornamental stone, crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This is a fairly well exposed outcrop of limited size. The rock is porphyritic with coarse plagioclase laths (to 2 cm in length) in a ground mass which includes a light green mineral of indeterminate mineralogy and secondary biotite. Limited hematite staining was observed. Jointing is moderate and occurs in both regular and irregular patterns. Despite the fact that this site has limited building stone potential, further study of the surrounding area is recommended.

Some of the biotite crystals are coarse. This may reduce the value of this rock as building stone material.

86-POR-003

PROPERTY NO. 86-POR-003 PLUTON NAME Bellrock Mafic Intrusion

PROPERTY NAME Napanee Creek COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Portland LOT 22 CONC. 12

NTS 31 C/7 UTM CO-ORDINATES Easting 358050 Northing 4926850

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark grey-light brown
Weathered Surface Pink-black-whitish
Uniform X Variable

WEATHERING DEPTH 5 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Porphyritic Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 118 degrees Dip vertical Spacing 2 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, biotite

DELETERIOUS MINERALS Yes X No Type Sulphides Percent $\leq$1%

OTHER FEATURES Quartz stringers (0.5 cm), surface pitted uniformily, feldspar alteration (intense).

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This outcrop forms part of the Bellrock mafic intrusion. The rock is an anorthosite with moderately sericitized plagioclase feldspar phenocrysts. Rare quartz and granitic stringers were observed. Sheeting further limits the building stone potential of this site; however, further study of surrounding areas is recommended.

86-POR-004

PROPERTY NO. 86-POR-004 PLUTON NAME First Depot Lake Mafic Intrusion

PROPERTY NAME First Depot Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Portland LOT 20 CONC. 12, 13

NTS 31 C/7 UTM CO-ORDINATES Easting 358150 Northing 4928500

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Black with light brown and grey
Weathered Surface Red-orange with black and flesh colour
Uniform X Variable

WEATHERING DEPTH 0.2 to 1 cm

GRAIN SIZE Fine (medium) Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, (sericitization), biotite

DELETERIOUS MINERALS Yes X No Type Sulphide Percent Trace

OTHER FEATURES Sheeting - very extensive jointing, feldspar phenocrysts, feldspar stringers, feldspar alteration, mafic dikes.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS The poor outcrop exposure at this site limits the interpretation of its building stone potential. This rock is a medium- to coarse-grained anorthosite that has undergone sericitization. The biotite component is also secondary. The mafic dikes contain pink felsic stringers and hematite staining on joint planes. Jointing is irregular and intense. This area shows little potential for building stone development.

86-HIN-001

PROPERTY NO. 86-HIN-001

PLUTON NAME Wilkinson Anorthosite

PROPERTY NAME Wilkinson

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Anorthosite

TOWNSHIP Hinchinbrooke

LOT 5 · CONC. 10

NTS 31 C/10 UTM CO-ORDINATES Easting 355750 Northing 4934000

PROPERTY STATUS Prospect

AIR PHOTO NO. 78-4438-126-167

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dark greyish black
Weathered Surface Brown
Uniform X Variable (X) Greenish to beige

WEATHERING DEPTH up to 1 cm

GRAIN SIZE Coarse Uniform Variable X

TEXTURE Massive to (porphyritic) Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

	Strike	Dip	Spacing
A)	100 degrees	90 degrees S	1 m - (0.5 m)
B)	180 degrees	40 degrees W	2 m
C)			
D)			

POTENTIAL FOR QUARRY BLOCKS Poor to moderate

MINERALOGY Plagioclase, biotite,

DELETERIOUS MINERALS Yes X No Type Hematite Percent Trace

OTHER FEATURES Some syenitic to mafic xenoliths observed; moderately abundant granitic stringers and pegmatite dikes (max. 10 m wide). Reddish hematite staining (0.5 m); occasional quartz veining (2 to 3 cm wide); feldspar alteration.

POSSIBLE USES Curbing stone, ornamental stone, landscaping stone, paving stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Harding (1951) classified this rock as an anorthosite. Much of the original plagioclase has undergone sericitization, however, some plagioclase phenocrysts have retained fresh surfaces. The average size of plagioclase laths is about 3 cm. The sericitized portion of the rock is a light green colour of indeterminate mineralogy. The variation in colour and texture (the result of alteration), the presence of granitic to pegmatitic stringers, and the intense jointing limit the building stone potential of this intrusion.

***Photo B57**. View showing jointing and fair outcrop exposure. 86-HIN-001*

THE RIDGE GRANITE

LOCATION South end of Wollaston Township, on the Murphy Corners Road 1 km east of the Ridge

NTS 31 C/13 OGS Map 2020 Geological Report 11

SAMPLE SITE 86-WOL-012

DESCRIPTION OF AREA

The Ridge Granite was described by Hewitt (1962, p.45) as follows:

"A small sill-like body of pink, coarse-grained leucogranite, with accessory biotite and hornblende, occurs on the northeast flank of The Ridge dome."

The sample site shows a red granite with intense irregular jointing, quartz veining, and exfoliation, all of which make the intrusion a poor prospect for building stone.

CONCLUSIONS

The Ridge granite has low potential for building stone.

POTENTIAL

POOR	MODERATE	GOOD
86-WOL-012		

REFERENCES

Davidson, A., Britton, J.M., Bell, K. and Blenkinsop, J. 1979. Regional synthesis of the Grenville Province of Ontario and western Quebec; in Current Research, Part B, Geological Survey of Canada, Paper 79-1B, p.153-262.

Hewitt, D.F. 1962. Geology of Wollaston Township; Ontario Geological Survey, Geological Report 11, p.29-55.

MacDonald, G. 1970. Geology-Kingston area; Department of Geology, Carleton University, 1968-70.

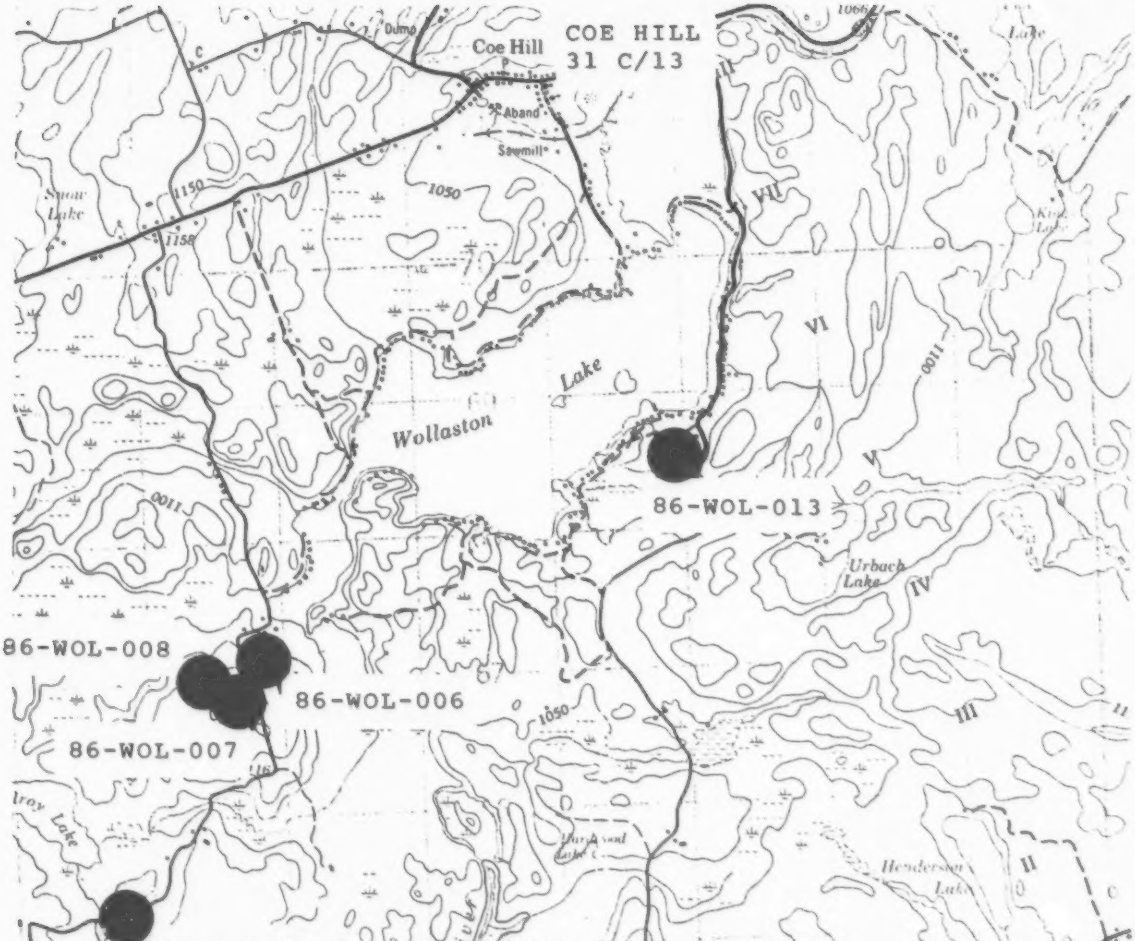
COE HILL
31 C/13
Coe Hill
Dumo
Aband
Sawmill
Snow Lake
Wollaston Lake
Urbach Lake
Henderson Lake
Castoroil Lake
Deer River
The Ridge
Creek
WOLLASTON TP
MARMORA AND LAKE TP
LAKE GEOGRAPHIC TP
86-WOL-013
86-WOL-008
86-WOL-006
86-WOL-007
86-WOL-009
86-WOL-012
86-WOL-010
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B40. Sample locations, The Ridge granite.

86-WOL-012

PROPERTY NO. 86-WOL-012

PLUTON NAME The Ridge Granite

PROPERTY NAME The Ridge

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Wollaston

LOT 16 CONC. 1

NTS 31 C/13 UTM CO-ORDINATES Easting 277750 Northing 4964350

PROPERTY STATUS Prospect

AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Red
Weathered Surface Orange-pink
Uniform Variable X

WEATHERING DEPTH up to 2 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 56 degrees Dip Vertical Spacing 10 cm to 1 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, quartz, amphibole, plagioclase

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Rare groupings of amphibole crystals (to 1 cm in diameter) quartz veins (15 cm width maximum), horizontal exfoliation on the 5 to 10 cm scale.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The proportion of mafic minerals throughout this rock varies to some extent. Hence, the colour of this rock is variable. Building stone potential is limited by horizontal exfoliation, vertical jointing, and quartz veins. This outcrop is fairly typical of the granitic rocks in the Ridge granite.

UMFRAVILLE GABBRO

LOCATION Northwest corner of Wollaston Township, northeast corner of Limerick Township

NTS 31 C/13 OGS Maps 2020, 2167 Geological Reports 11, 67

SAMPLE SITES 86-WOL-004, 86-WOL-005

DESCRIPTION OF THE AREA

The Umfraville gabbro is an area of relatively high elevation compared to the surrounding areas and outcrop exposure is fairly good, as is access via the Ragged Lake Road.

Two areas were sampled, both to the north of Ragged Lake. The first (86-WOL-004) is a greyish-beige, coarse-grained gabbro, the second (86-WOL-005) is possibly a metadiorite or metagabbro.

Jointing in the area is moderate and varies from regular to irregular. The spacing between joints ranges up to 3 m; however, at 86-WOL-004, one joint-free area 9 m wide was encountered. Horizontal sheeting appears to be limited.

Undesirable features of the area include some pegmatite dikes (up to 2 m wide) and rare quartz stringers. At 86-WOL-004, the presence of very fine grained mafic dikes and muscovite reduce the potential for building stone.

CONCLUSIONS

While the rock in this area appears to have enough appeal asthetically for building stone, there are too many factors which render it unsuitable, such as deleterious muscovite in sample 86-WOL-004. In the case of 86-WOL-005, varying grain size and the nature of the jointing limit the potential uses to small blocks such as paving stones.

POTENTIAL

POOR	MODERATE	GOOD
86-WOL-004		
86-WOL-005		

REFERENCES

Hewitt, D.F. 1956. The Grenville region of Ontario; in the Grenville Problem, Royal Society of Canada, Special Publication 1, p.22-41.

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---1962. Geology of Wollaston Township, Hastings County, Ontario; Ontario Department of Mines, Geological Report 11, 59p.

Hewitt, D.F. and James, W. 1956. Geology of Dungannon and Mayo townships, County of Hastings, Ontario; Ontario Department of Mines, Annual Report, 1955, v.64, pt.8.

Hewitt, D.F. and Satterly, J. 1957. Haliburton-Bancroft area, Province of Ontario; Ontario Department of Mines, Map 1957B, scale 1:126 720.

Lumbers, S.B. 1969. Geology of Limerick and Tudor townships, Hastings County, Ontario; Ontario Department of Mines, Geological Report 67, 110p.

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Symons, D.T.A. 1978. Paleomagnetism of the 1180 Ma Grenvillian Umfraville gabbro, Ontario; Canadian Journal of Earth Sciences, v.15, no.6, p.956-962.

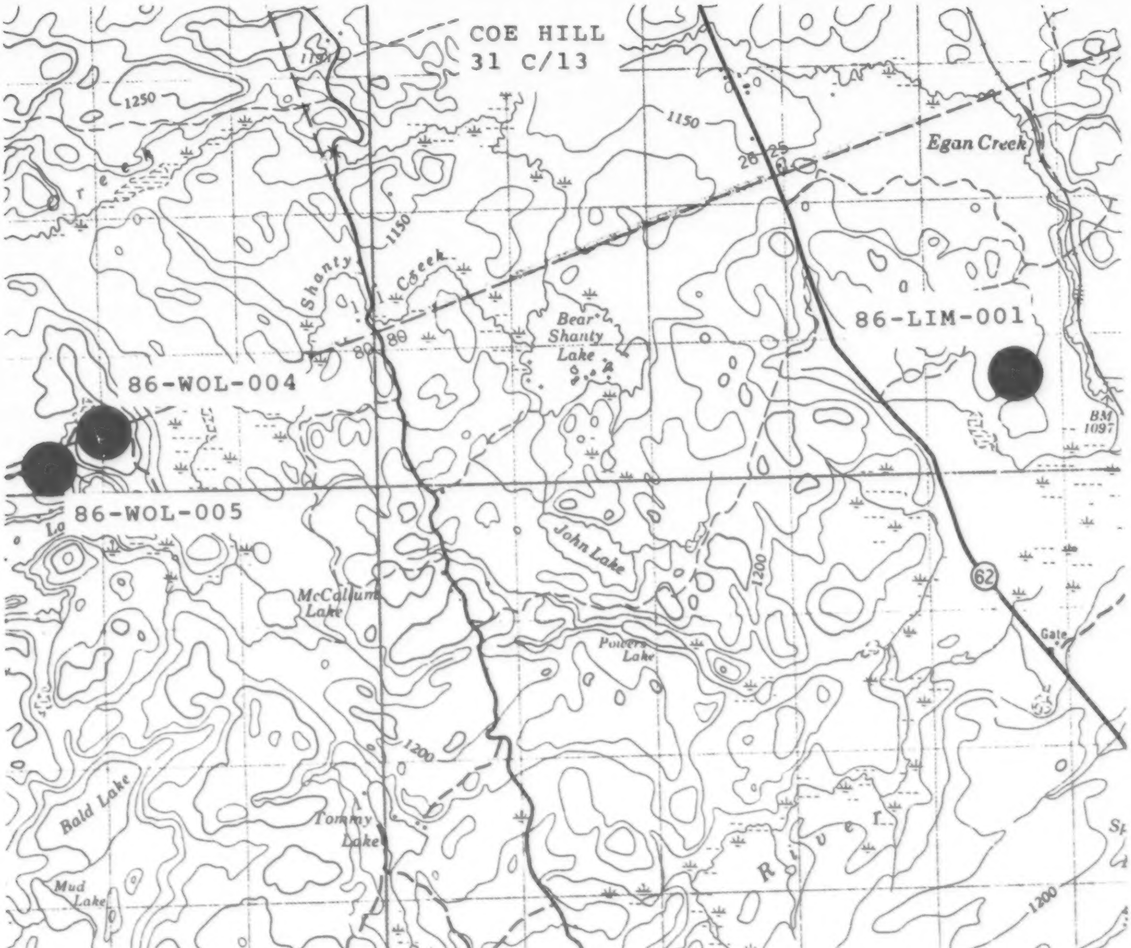

COE HILL
31 C/13
86-LIM-001
86-WOL-004
86-WOL-005
86-WOL-001
Egan Creek
Shanty Creek
Bear Shanty Lake
John Lake
McCallum Lake
Powers Lake
Bald Lake
Tommy Lake
Mud Lake
Bear L.
River
Brinklow L.
Ormsby
Sweets Lake
Drumm Lake
Finnegan Lake
Abandoned
78
79
80
81
82
83
84
1150
1200
1250
1100
62
620
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B41. Sample locations, Umfraville gabbro.

86-WOL-004

PROPERTY NO. 86-WOL-004 PLUTON NAME Umfraville Gabbro

PROPERTY NAME Wollaston Faraday Twp. COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro (possibly anorthositic)

TOWNSHIP Wollaston LOT 3 CONC. 16

NTS 31 C/13 UTM CO-ORDINATES Easting 378050 Northing 4980400

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4439-16-161

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Greyish beige
Weathered Surface Grey-pink
Uniform X Variable

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Coarse Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 150 degrees Dip Vertical Spacing ≤9 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, quartz, muscovite, biotite

DELETERIOUS MINERALS Yes X No Type Muscovite Percent Trace

OTHER FEATURES Pegmatite dikes 2 m wide; quartz stringers (rare); limited horizontal sheeting; mafic dikes.

POSSIBLE USES Ashlar, curbing stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This area is found north of Ragged Lake on the Wollaston-Faraday township line. The outcrop is a coarse-grained, massive, anorthositic gabbro containing plagioclase, quartz, biotite and muscovite. Fresh surface is a greyish beige (uniform) and weathers to a depth of no more than 2 mm. The area is regularly and irregularly jointed. Mafic dikes, quartz stringers and pegmatite dikes were observed. Limited horizontal sheeting was also noted. The features described above limit the potential of this area as a building stone site.

86-WOL-005

PROPERTY NO. 86-WOL-005 PLUTON NAME Umfraville Gabbro

PROPERTY NAME Ragged Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Wollaston LOT 4, 5 CONC. 16

NTS 31 C/13 UTM CO-ORDINATES Easting 377600 Northing 4980200

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4439-16-161

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Black
Weathered Surface Grey
Uniform Variable X

WEATHERING DEPTH

GRAIN SIZE Fine to coarse Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 0 degrees Dip Vertical Spacing 2 to 3 m
B) Strike 120 degrees Dip Vertical Spacing 0.5 to 2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Hornblende, quartz, feldspar, plagioclase, some biotite

DELETERIOUS MINERALS Yes X No Type Biotite Percent

OTHER FEATURES Granitic dike, surface of outcrop appears somewhat pitted and gouged. Some severe horizontal jointing.

POSSIBLE USES Ashlar, crushed stone.

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Building stone potential at this area is low due to the nature of the jointing and fracturing, and varying grain size and texture.

WADSWORTH TRONDHJEMITE

LOCATION Northeast corner of Tudor Township, approximately 1 mile northeast of Gilmour

NTS 31 C/13 OGS Map 2168 Geological Report 67

SAMPLE SITES 86-TUD-01, 86-TUD-02

DESCRIPTION OF AREA

Lithologies observed in this intrusion include trondjemite and amphibole-rich trondjemite comprised mainly of plagioclase, quartz and hornblende/biotite. Although compositionally less diverse than the Beaver Creek or Glanmire complexes, the Wadsworth intrusion suffers from poor exposure and moderate to intense jointing.

CONCLUSIONS

Further access may be achieved by boat from the north shore of Wadsworth Lake but does not appear warranted on the basis of expected available exposure and intensity of jointing. The potential for building stone, albeit better than Beaver Creek or Glanmire, is still poor. Uses are limited to paving stone and ashlar.

POTENTIAL

POOR	MODERATE	POOR
86-TUD-001		
86-TUD-002		

REFERENCES

Lumbers, S.B. 1962. Tudor Township, north half, County of Hastings, Ontario; Ontario Department of Mines, Map P.146, scale 1:15 840.

---1969. Geology of Limerick and Tudor townships, Hastings County, Ontario; Ontario Department of Mines, Geological Report 67, 110p.

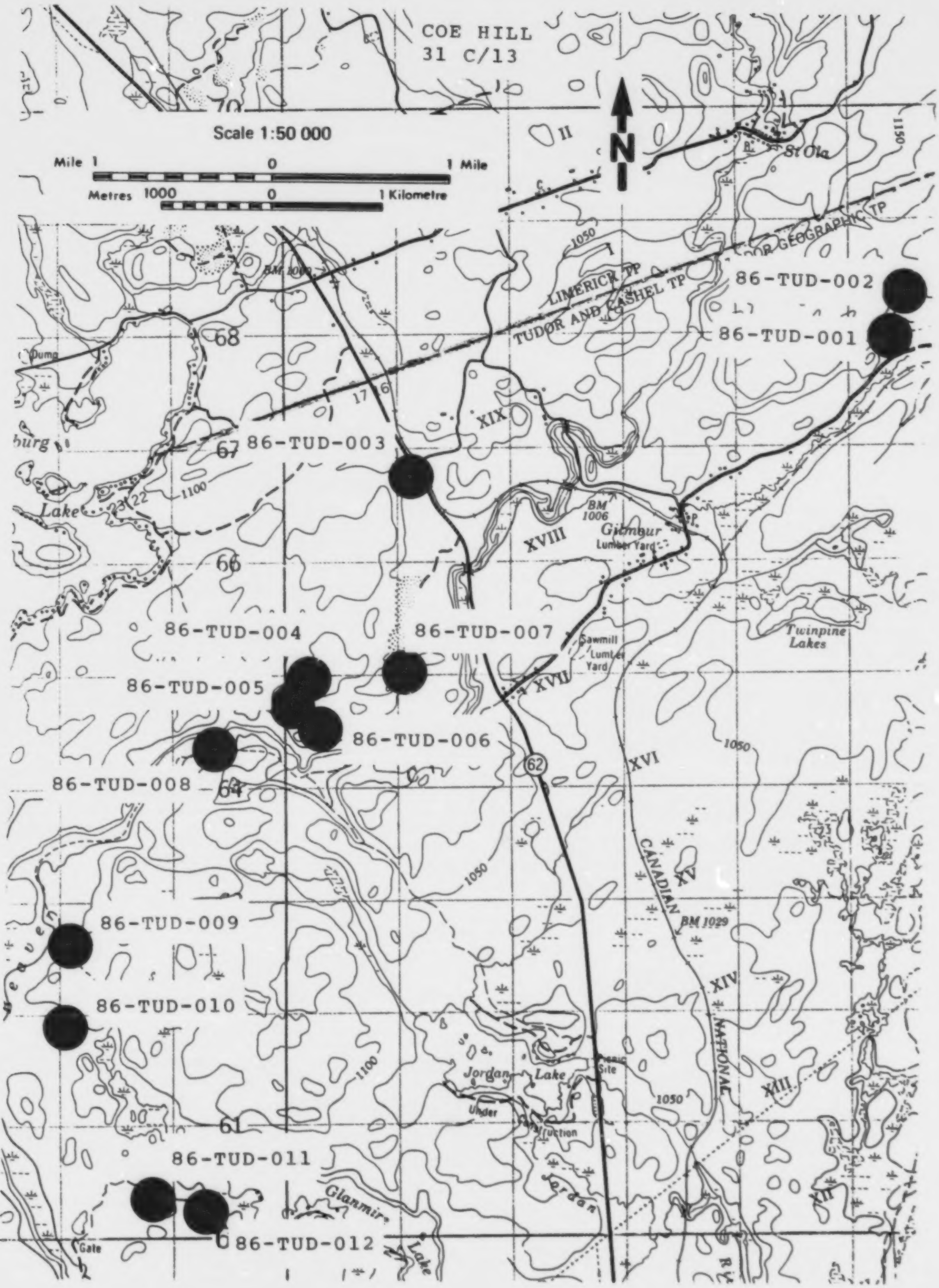

COE HILL
31 C/13
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N
St Ola
LIMERICK TP
TUDOR AND CASHEL TP
GEOGRAPHIC TP
86-TUD-002
86-TUD-001
86-TUD-003
86-TUD-004
86-TUD-005
86-TUD-006
86-TUD-007
86-TUD-008
86-TUD-009
86-TUD-010
86-TUD-011
86-TUD-012
Gilmour
Lumber Yard
Sawmill
Lumber Yard
Twinpine Lakes
Jordan Lake
Under Construction
Glanmire Lake
CANADIAN NATIONAL RY
BM 1006
BM 1029
62
XIX
XVIII
XVII
XVI
XV
XIV
XIII
XII
1050
1100
1150
70
68
67
66
64
61
Dump
Lake
Gate

Figure B42. Sample locations, Wadsworth trondhjemite.

86-TUD-001

PROPERTY NO. 86-TUD-001

PLUTON NAME Wadsworth Trondhjemite

PROPERTY NAME Westsworth Lake-1 (gravel pit)

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Amphibole Trondhjemite

TOWNSHIP Tudor

LOT 6 CONC. 19

NTS 31 C/13 UTM CO-ORDINATES Easting 295400 Northing 4968000

PROPERTY STATUS Prospect

AIR PHOTO NO. 78-4458-190-215

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface White (with dark hornblende)
Weathered Surface Greyish white
Uniform X Variable

WEATHERING DEPTH ≤0.75 cm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable (X)

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern (X)
Limited Jointing Moderate Jointing X Intensive Jointing (X)

	A)	Strike 160 degrees	Dip 90 degrees	Spacing 1 m
Subhorizontal	B)	Strike 020 degrees	Dip 20 degrees N	Spacing 1 m
	C)	Strike 040 degrees	Dip 90 degrees	Spacing ?
	D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, hornblende

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES One granitic stringer observed.

POSSIBLE USES Paving stone, ashlar, landscaping stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a massive, medium-grained amphibole trondhjemite. The rocks are intensely jointed in this area.

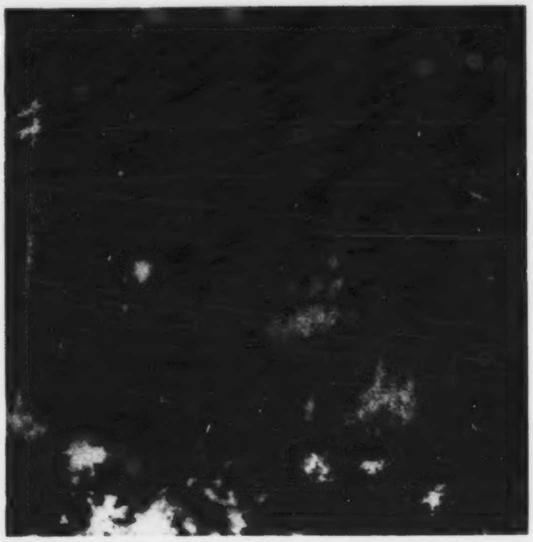


***Photo B58**. General appearance of outcrop. Note vertical and subhorizontal jointing. 86-TUD-001*

86-TUD-002

PROPERTY NO. 86-TUD-002 PLUTON NAME Wadsworth Trondhjemite

PROPERTY NAME Wadsworth Lake-2
(Boyd Property)

COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Trondhjemite

TOWNSHIP Tudor LOT 5 CONC. 19

NTS 31 C/13 UTM CO-ORDINATES Easting 295450 Northing 4968400

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4459-190-41

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Grey
Weathered Surface White
Uniform X Variable

WEATHERING DEPTH ≤0.75 cm

GRAIN SIZE Medium Uniform X Variable (X)

TEXTURE Massive to weakly foliated Uniform X Variable (X)

FABRIC Yes X No. Weak X Mod. Strong Strike 30 degrees
Dip 90 degrees

Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern (X) Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 030 degrees Dip 90 degrees Spacing 0.5 m
B) Strike 100 degrees Dip 90 degrees Spacing 1 to 2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Epidotized slip planes observed; penetrative cleavage associated with foliation.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a greenish-grey, medium-grained trondhjemite. It contains both regular and irregular joint patterns which are closely spaced. A penetrative cleavage corresponds to the foliation. Outcrop exposure is extremely limited.

WESLEMKOON GRANITE

LOCATION Parts of Grimsthorpe, Cashel, Mayo, Ashby, Effingham, Abinger, and Denbigh Townships

NTS 31 C/14, 31 F/3 OGS Maps 2049, 2142 Geological Reports 26, 71

SAMPLE SITE 86-DEN-001

DESCRIPTION OF AREA

The Weslemkoon batholith was described by Lumbers (1968, p.23-25) as follows: "In plan, the batholith is mushroom-shaped with a roughly circular northern lobe about 22 km in diameter, and a gently curved, elongate southern lobe, about 16 km long and 6 km wide, which extends southward from the south-central part of the northern lobe."

Along the southern and western margins of the northern lobe, discontinuous narrow zones of contaminated gabbro and diorite separate the granitic rocks of the batholith from the surrounding metavolcanics.

Near the margins of the southern lobe, granitized and migmatitic country rocks are absent, and contaminated border phases of the batholith are rare. The northern lobe shows a poorly defined compositional zoning and consists mainly of trondhjemite, granodiorite, and tonalite; sodic granite and granodiorite are concentrated near the western and central parts of the lobe and are partly surrounded by a zone rich in tonalite. Elsewhere in the northern lobe, trondhjemite predominates, but, locally near the margins of the lobe, concentrations of granodiorite are present. Trondhjemite and granodiorite constitute most of the southern lobe, but the areal distribution of these phases is more random than in the northern lobe.

Granitic rocks of the northern lobe are intensely foliated with abundant schlieren and granitic gneisses which are best developed near the marginal and central parts of the lobe. Gneissosity is caused by elongated quartz and plagioclase aggregates and by discontinuous biotite-rich layers only a few millimetres thick. In the southern lobe, the granitic rocks are less intensely foliated than in the northern lobe, and, locally, near the central part of the lobe these rocks are massive. In unweathered outcrops of the granitic rocks within both lobes, compositional layering parallel to the foliation is present and is marked by biotite-rich and biotite-poor layers as much as three feet thick; in places a colour banding is present in which grey bands containing magnetite as the chief accessory iron-titanium oxide mineral alternate with pink bands containing hematite as the chief accessory iron-titanium oxide mineral."

CONCLUSIONS

Sample site 86-DEN-001 is not representative of the batholith as a whole. However, due to marginal contamination, compositional variation and foliation as described by Lumbers, the potential for building stone is low. There may be higher potential in the central part of the southern lobe, where the rock is more massive, but access to this area is poor.

POTENTIAL

POOR	MODERATE	GOOD
86-DEN-001		

REFERENCES

Evans, A.M. 1964. Geology of Ashby and Denbigh townships; Ontario Department of Mines, Geological Report 26, 39p.

Lumbers, S.B. 1968. Geology of Cashel Township; Ontario Department of Mines, Geological Report 71, 54p.

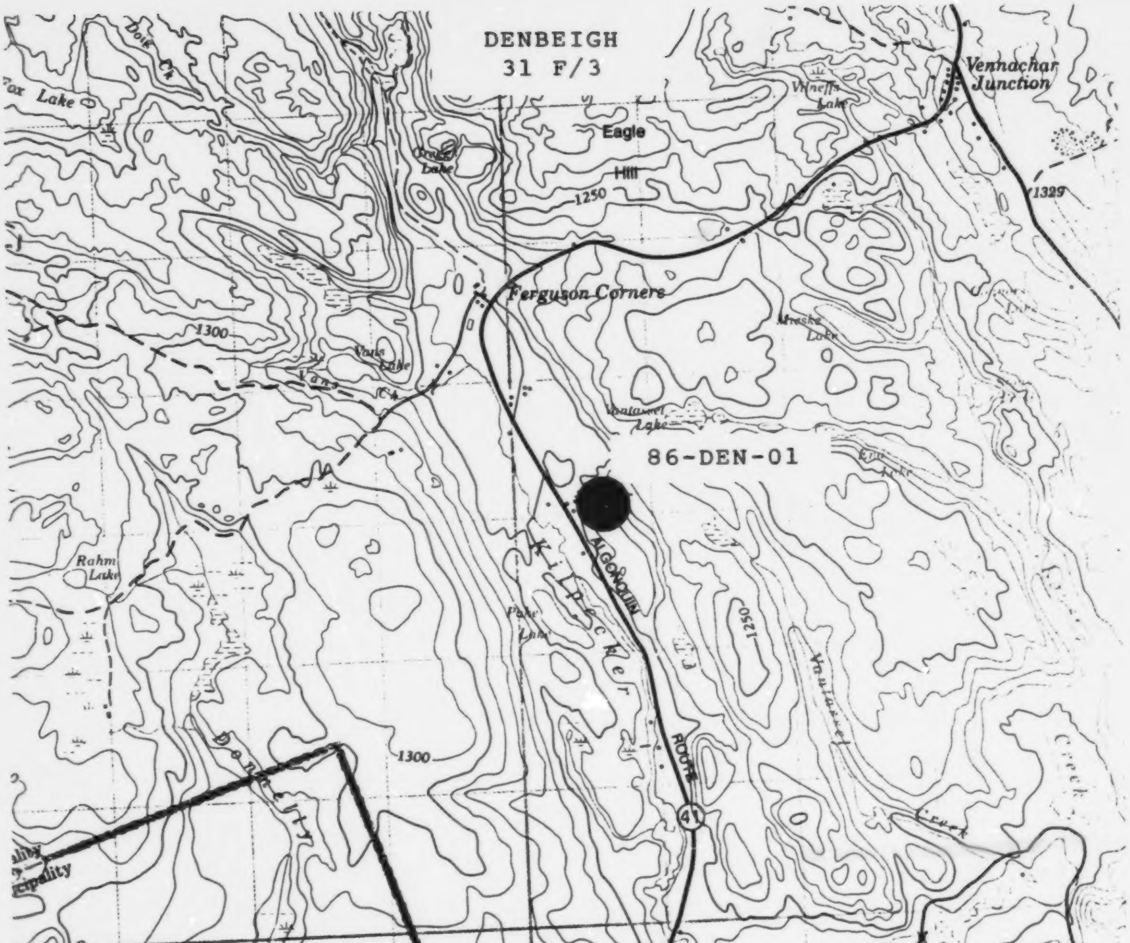

DENBEIGH
31 F/3
Fox Lake
Eagle
Hill
1250
Vennachar Junction
1329
Ferguson Corners
1300
Vans Lake
86-DEN-01
Rahm Lake
ALGONQUIN
ROUTE
41
Pake Lake
Kilpecker Creek
1250
Vanlaese
Creek
1300
Mouse Lake
Bear Pond
1200
Upper Bear Pond
1000
900
Irvine Lake
1150
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N

Figure B43. Sample location, Weslemkoon granite.

86-DEN-001

PROPERTY NO. 86-DEN-001 PLUTON NAME Weslemkoon Granite

PROPERTY NAME Cecil Miski COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Denbigh LOT 4 CONC. East Range

NTS 31 F/3 UTM CO-ORDINATES Easting 320600 Northing 4993150

PROPERTY STATUS Inactive AIR PHOTO NO. 78-4505-107-7

PRODUCTION HISTORY Roadcut

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface Salt and pepper - grey-white
Weathered Surface Salt and pepper - grey-white
Uniform X Variable

WEATHERING DEPTH Nil

GRAIN SIZE Fine to medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Foliation

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern
Limited Jointing Moderate Jointing Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz stringers - small outcrop or drift.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS The granite found on this property is a fine- to medium-grained, foliated, salt and pepper coloured rock consisting essentially of quartz and biotite.

Due to the nature of the outcrop, which appears to be float, jointing cannot be assessed. A bush road has also been constructed through the area and blasting fractures further hinder accurate interpretation of jointing. Small quartz stringers were noted in the rock and this further limits the potential of this area for building stone applications. Possible uses for this stone include ashlar and crushed stone.

WESTPORT PLUTON

LOCATION North shore of Upper Rideau Lake within North Crosby Township

NTS 31 C/9 OGS Map 2054

SAMPLE SITES 86-NCROS-001, 86-NCROS-002

DESCRIPTION OF THE AREA
The Westport pluton is a fairly large granitic body found on the north shore of Upper Rideau Lake. This pluton consists predominantly of pegmatite with very little granite. The rocks that are granitic appear to be aplites or granites with large biotite crystals that would pluck out upon polishing. The rock here is not attractive and the intense jointing indicates low potential for the extraction of large quarry blocks. It is doubtful that further investigation of this area would yield an area with good potential.

CONCLUSIONS
Very low potential for building stone in this pluton.

POTENTIAL

POOR	MODERATE	GOOD
86-NCROS-001		
86-NCROS-002		

REFERENCES

Baker, M.B. 1923. Geology and minerals of the County of Leeds, Ontario; Ontario Department of Mines, Annual Report, 1922, v.31, pt.6.

Davidson, A., Britton, J.M., Bell, D. and Blenkinsop, J. 1979. Regional synthesis of the Grenville Province of Ontario and western Quebec; in Current Research, Part B, Geological Survey of Canada, Paper 79-1B, p.153-262.

Hewitt, D.F. 1964. Geological notes for Maps Nos. 2053 and 2054, Madoc-Gananoque area, NTS 31B/5 + 12, 31C, Ontario; Ontario Department of Mines, Geological Circular 12, 33p.

Krogh, T.E. and Hurley, P.M. 1968. Strontium isotope variation and whole-rock isochron studies, Grenville Province of Ontario; Journal of Geophysical Research, v.73, p.7107-7125.

Wynne-Edwards, H.R. 1957. The structure of the Westport concordant pluton in the Grenville, Ontario; Journal of Geology, v.65, p.639-649.

---1967. Westport map-area, Ontario; Geological Survey of Canada, Memoir 346.

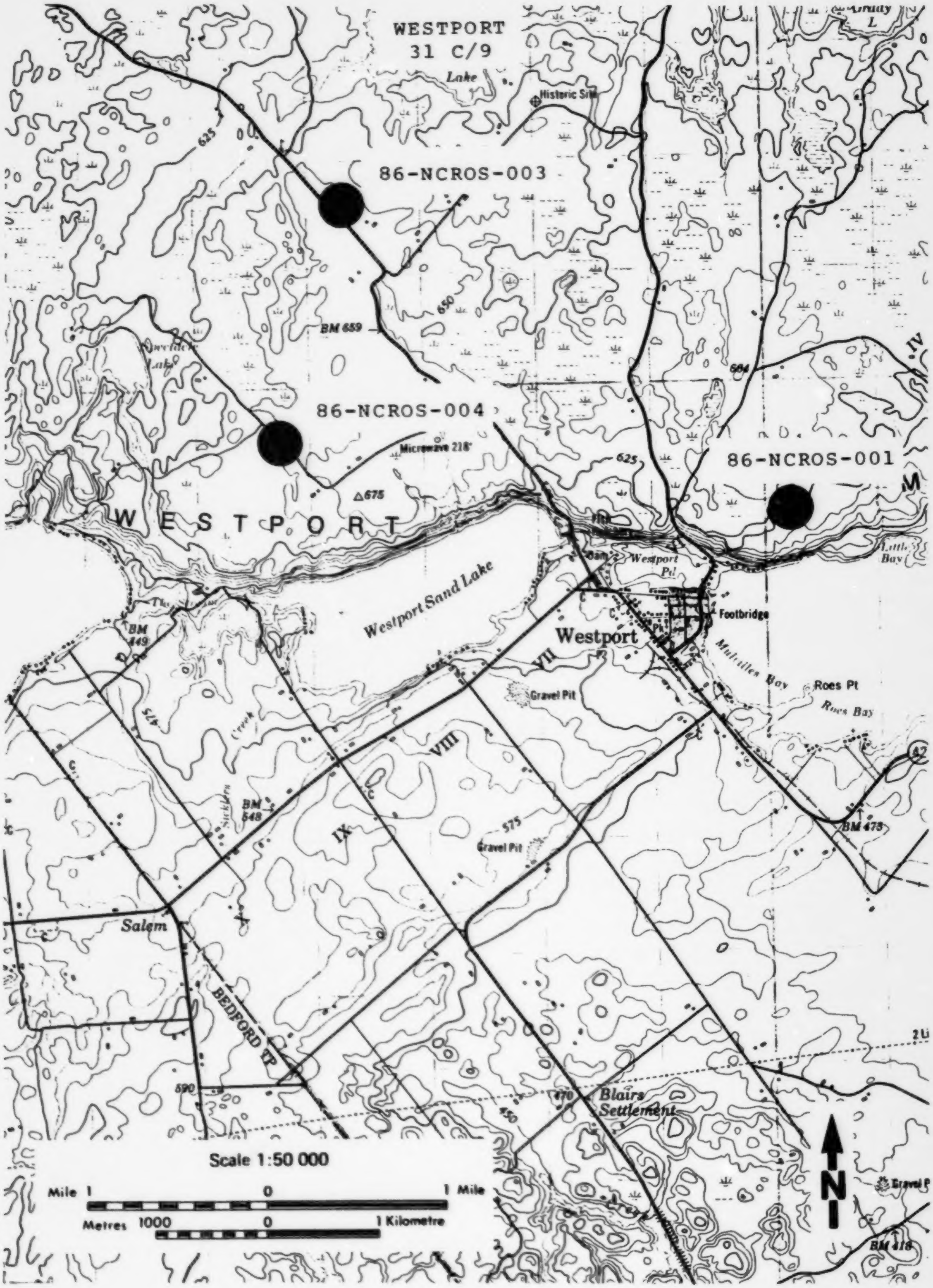

WESTPORT
31 C/9
86-NCROS-003
86-NCROS-004
86-NCROS-001
WESTPORT
Westport Sand Lake
Westport
Footbridge
Historic Site
BM 659
Microwave 218'
△675
Gravel Pit
Roes Pt
Roes Bay
BM 449
BM 548
BM 473
BM 418
Salem
BEDFORD TP
Blairs Settlement
VII
VIII
IX
X
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B44. Sample locations, Westport pluton (sheet 1).

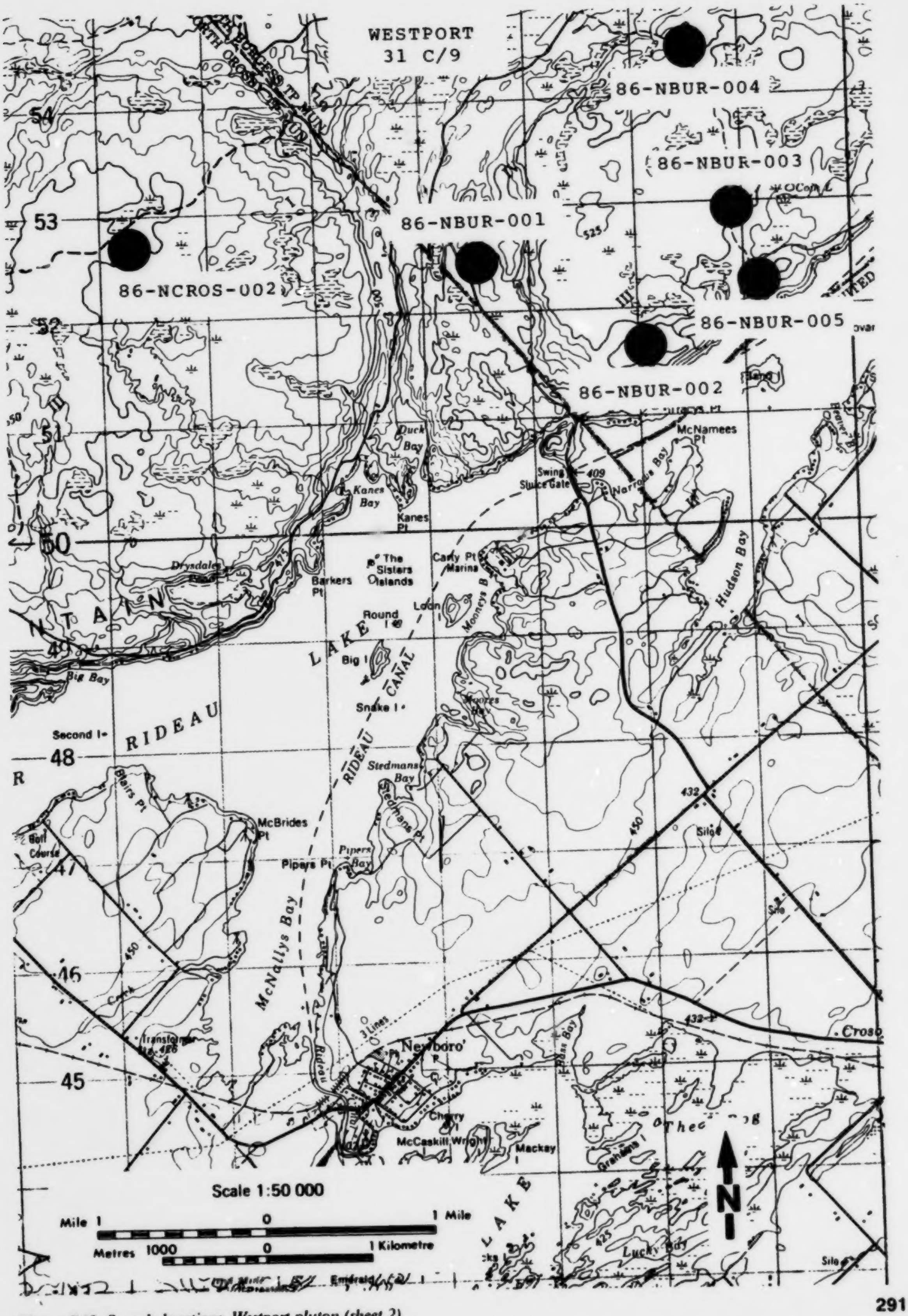

WESTPORT
31 C/9
86-NBUR-004
86-NBUR-003
86-NBUR-001
86-NCROS-002
86-NBUR-005
86-NBUR-002
54
53
52
51
50
49
48
47
46
45
Duck Bay
Kanes Bay
Kanes Pt
McNamees Pt
Swing
Sluice Gate
Narrows Bay
Hudson Bay
Drysdales Bay
Barkers Pt
The Sisters Islands
Carty Pt
Marina
Mooneys B
Round I
Loon
Big I
Snake I
Second I
RIDEAU
LAKE
RIDEAU CANAL
Moores Bay
Stedmans Bay
Stedmans Pt
Blairs Pt
McBrides Pt
Golf Course
Pipers Pt
Pipers Bay
McNallys Bay
Newboro'
Cherry
McCaskill Wright
Mackay
Grahams I
Lucky Bay
LAKE
Silo
Crosby
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B45. Sample locations, Westport pluton (sheet 2).

86-NCROS-001

PROPERTY NO. 86-NCROS-001 PLUTON NAME Westport Pluton

PROPERTY NAME RVCA COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Monzonite

TOWNSHIP North Crosby LOT 11 CONC. 6

NTS 31 C/9 UTM CO-ORDINATES Easting 390150 Northing 4948900

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-128-92

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink brown
Weathered Surface Light pink
Uniform Variable X

WEATHERING DEPTH 1 to 1.5 cm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 148 degrees Dip Spacing 1 m
B) Strike 58 degrees Dip Spacing 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite; Mafic content: approx. 15 to 20%

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Numerous pegmatite dikes, minor alteration, hematite staining

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This rock is a pinkish-brown, massive monzonite of the Westport pluton. It has a medium grain size but contains some feldspar megacrysts. Pegmatite phases were observed in the area. The building stone potential of this rock is further limited by the presence of intense regular and irregular joint patterns and hematite staining.

86-NCROS-002

PROPERTY NO. 86-NCROS-002 PLUTON NAME Westport Pluton

PROPERTY NAME Core Area COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP North Crosby LOT 13 CONC. 2

NTS 31 C/9 UTM CO-ORDINATES Easting 393250 Northing 4952750

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4450-131-83

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH 1 to 1.5 cm

GRAIN SIZE Fine to coarse Uniform Variable X

TEXTURE Massive porphyritic to gneissic Uniform Variable X

FABRIC Yes X No. Weak X Mod. Strong (X) Strike Dip
Formed By Alignment of biotite + gneissosity

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, quartz, biotite, K-spar

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Numerous quartz pods, pegmatite dikes cover 20% of exposure; mafic inclusions, quartz veins.

POSSIBLE USES Limited; not suitable for dimension stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This outcrop is a pink granite from the centre of the Westport pluton. Several areas of the Westport pluton were observed and this site is representative of the sites evaluated. Inconsistent mineralogy, texture and grain size characterize this granitic rock, limiting its use for building stone.

WHITE LAKE FELSIC INTRUSION

LOCATION East-central Olden and west-central Oso Township; north of Sharbot Lake

NTS 31 C/15 OGS Map 2471 Report 228

SAMPLE SITES 86-OSO-004, 86-OLD-001, 86-OLD-002

DESCRIPTION OF AREA

Wolff (1985) described the intrusion as late-stage granitic rocks intruding clastic and carbonate metasediments. The granitic rocks include biotite granite, quartz monzonite, granodiorite, syenite, and porphyritic varieties of the preceding units. They are similar in composition and structural setting to the McLean granite and may be a northeasterly extension of this intrusion. Outcrops at the sample sites exhibit irregular, intense jointing and other deleterious features such as pegmatite dikes, pyrite, and magnetite.

CONCLUSIONS

The White Lake felsic intrusion has low potential as a building stone prospect.

POTENTIAL

POOR	MODERATE	GOOD
86-OSO-004		
86-OLD-001		
86-OLD-002		

REFERENCES

Wolff, J.M. 1985. Geology of the Sharbot Lake area, Frontenac and Lanark counties, southeastern Ontario; Ontario Geological Survey, Report 228, 70p.

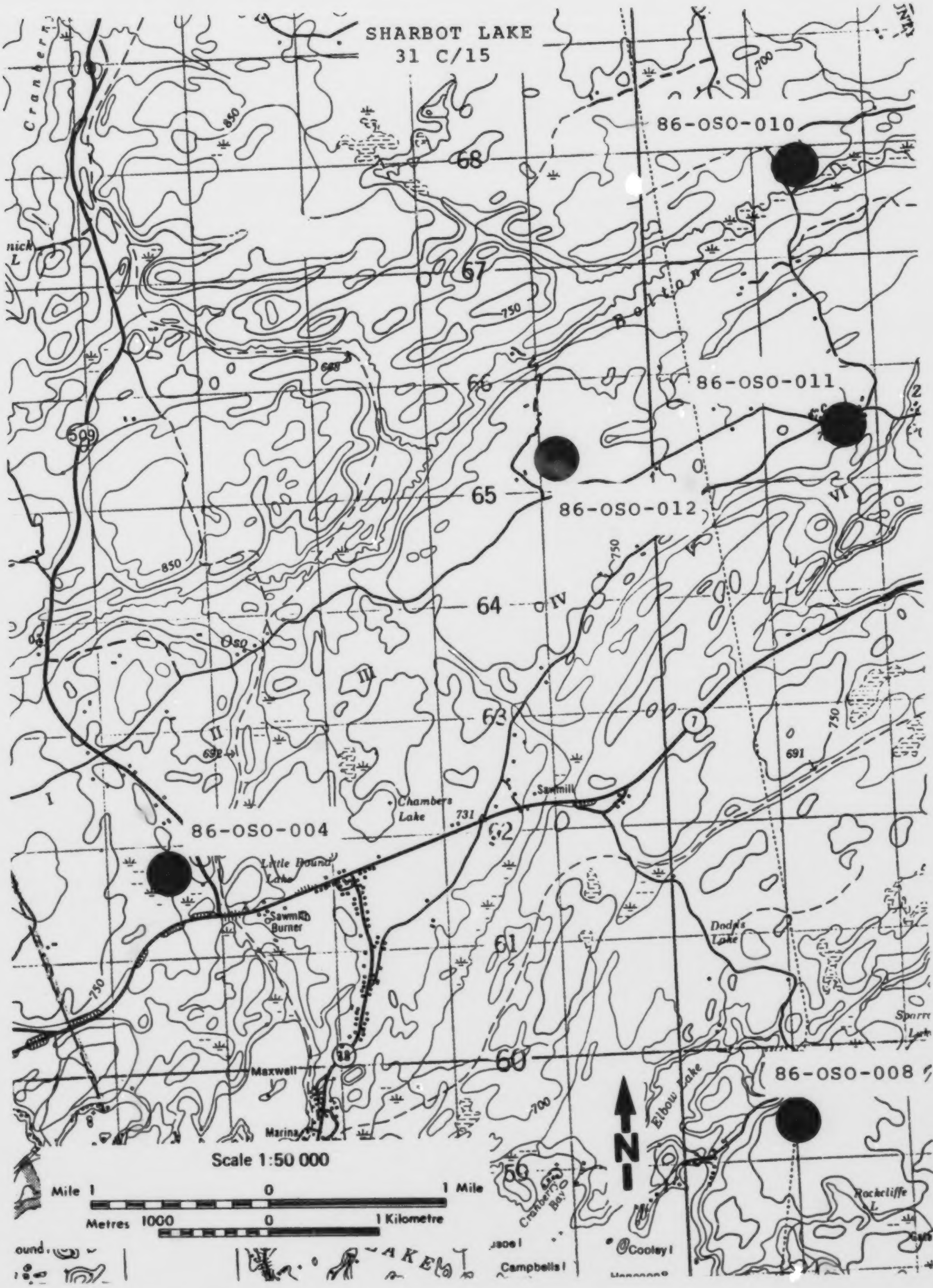

SHARBOT LAKE
31 C/15
86-OSO-010
86-OSO-011
86-OSO-012
86-OSO-004
86-OSO-008
68
67
66
65
64
63
62
61
60
59
Bolton
Oso
Chambers Lake
Little Round Lake
Sawmill
Sawmill Burner
Maxwell
Marina
Dodds Lake
Elbow Lake
Cranberry Bay
Rockcliffe L.
Cooley I
Campbells I
Cranberry
509
7
38
850
750
700
691
692
731
I
II
III
IV
VI
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B46. Sample locations, White Lake felsic intrusion (sheet 1).

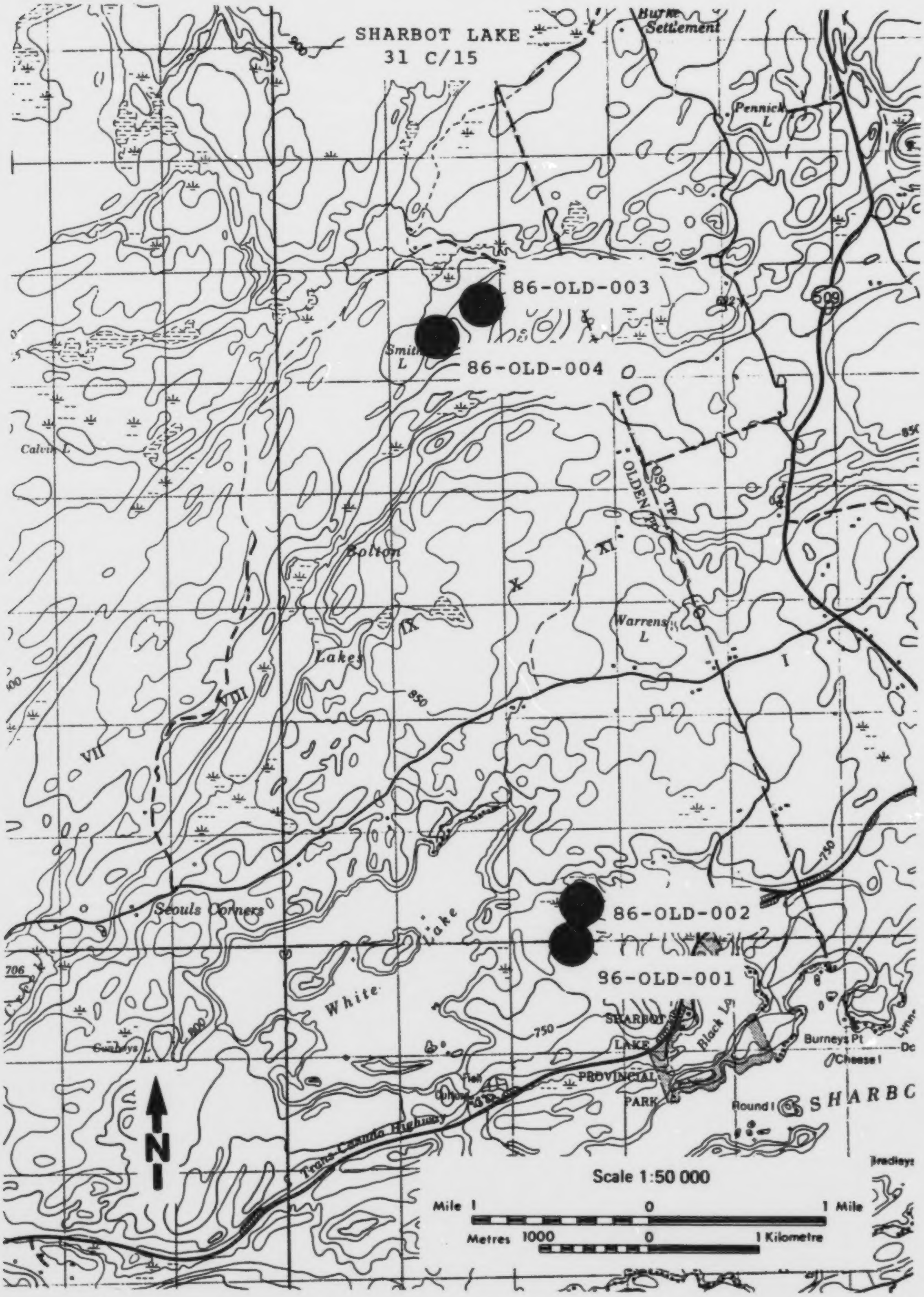

SHARBOT LAKE
31 C/15
Burke Settlement
Pennick L
509
86-OLD-003
86-OLD-004
Smith L
Calvin L
OSO TP
OLDEN TP
XI
X
Bolton
IX
Lakes
Warrens L
I
VIII
VII
850
750
Scouls Corners
White Lake
86-OLD-002
86-OLD-001
706
800
SHARBOT LAKE PROVINCIAL PARK
Black L
Burneys Pt
Cheese I
Round I
SHARBO
Trans Canada Highway
TN
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B47. Sample locations, White Lake felsic intrusion (sheet 2).

86-OSO-004

PROPERTY NO. 86-OSO-004 PLUTON NAME White Lake Felsic Intrusion

PROPERTY NAME Little Round Lake 1 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granodiorite

TOWNSHIP Oso LOT 18 CONC. 1

NTS 31 C/15 UTM CO-ORDINATES Easting 365550 Northing 4961800

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4455-164-169

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink-brown
Weathered Surface Light pink
Uniform Variable X

WEATHERING DEPTH 4 mm

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive (slight foliation) Uniform X Variable

FABRIC Yes X No. Weak X Mod. Strong Strike 75 degrees Dip
Formed By Foliation alignment of hornblende

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X

A) Strike 25 degrees	Dip Vertical	Spacing 2 to 5 m
B) Strike 100 degrees	Dip Vertical	Spacing 0.5 to 4 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole, biotite (epidote)

DELETERIOUS MINERALS Yes X No Type Magnetite Percent 20%

OTHER FEATURES Pegmatite dikes, aplite dikes. 5 cm stringers of amphibole.

POSSIBLE USES Curbing stone, ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a medium-grained, pinkish-brown granodiorite. It is cut by pegmatite and aplite dikes, and stringers of amphibole. The jointing occurs in closely spaced, regular and irregular joint patterns. These factors detract from the building stone potential of this site.

86-OLD-001

PROPERTY NO. 86-OLD-001 PLUTON NAME White Lake Felsic Intrusion

PROPERTY NAME White Lake I COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 17 CONC. 9

NTS 31 C/15 UTM CO-ORDINATES Easting 362500 Northing 4960000

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4454-163-211

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Rusty pink
Uniform X Variable

WEATHERING DEPTH >1 cm up to 10 cm thick (very friable)

GRAIN SIZE Medium to coarse Uniform X Variable (X)

TEXTURE Foliated Uniform X Variable

FABRIC Yes No. Weak Mod. X Strong Strike Dip
Formed By Visible foliation planes

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern (X) Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 360 degrees Dip 70 degrees E Spacing 0.1 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz

DELETERIOUS MINERALS Yes X No Type Sulphides and/or hematite Percent Trace

OTHER FEATURES Occasional hematite coated fractures; rusted out, disseminated sulphides; rare granitic stringers and quartz veins; rubbly weathering and poor exposure.

POSSIBLE USES Rubble

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This outcrop is a well-foliated, deeply weathered, pink granite. The weathering depth is greater than 10 cm. Weathered areas and foliation planes are often rust coloured. The outcrop also contains intense irregular jointing. These factors limit the building stone potential of this area.

Photo B59. Rubbly, rusty weathering of pink granite. 86-OLD-001

86-OLD-002

PROPERTY NO. 86-OLD-002 PLUTON NAME White Lake Felsic Intrusion

PROPERTY NAME White Lake 2 COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Olden LOT 17 CONC. 9

NTS 31 C/5 UTM CO-ORDINATES Easting 362600 Northing 4960300

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4454-163-211

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH 2 mm

GRAIN SIZE Medium Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole

DELETERIOUS MINERALS Yes X No Type Sulphides Percent Trace

OTHER FEATURES Intense weathering, intensely jointed.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This massive, medium-grained granite is intensely jointed and weathered. For these reasons, building stone potential is limited.

WOLFE LAKE PLUTON

LOCATION North Crosby Township, northeast of Wolfe Lake, west of Highway 42 and south of Mash Meadows

NTS 31 C/9 OGS Map 2054

SAMPLE SITES 86-NCROS-003, 86-NCROS-004

DESCRIPTION OF AREA

The Wolfe Lake pluton consists of a highly foliated pink granite and pegmatite dikes. Several sites which were investigated turned out to be large pegmatitic ridges with limited granite exposure. Sample 86-NCROS-003 was taken very close to the centre of the pluton and showed intense irregular jointing, as did 86-NCROS-004. The intense jointing and variable colour and grain size indicate that the Wolfe Lake pluton has very little potential for building stone applications.

POTENTIAL

POOR	MODERATE	GOOD
86-NCROS-003		
86-NCROS-004		

REFERENCES

Baker, M.B. 1923. Geology and minerals of the County of Leeds, Ontario; Ontario Department of Mines, Annual Report, 1922, v.31, pt.6.

Davidson, A., Britton, J.M., Bell, K. and Blendinsop, J. 1979. Regional synthesis of the Grenville Province of Ontario and western Quebec; in Current Research, Part B, Geological Survey of Canada, Paper 79-1B, p.153-262.

Hewitt, D.F. 1964. Geological Notes for Maps Nos. 2053 and 2054, Madoc-Gananoque area, NTS 31B/5 + 12, 31C, Ontario; Ontario Department of Mines, Geological Circular 12, 33p.

Wynne-Edwards, H.R. 1967. Westport map-area, Ontario; Geological Survey of Canada, Memoir 346.

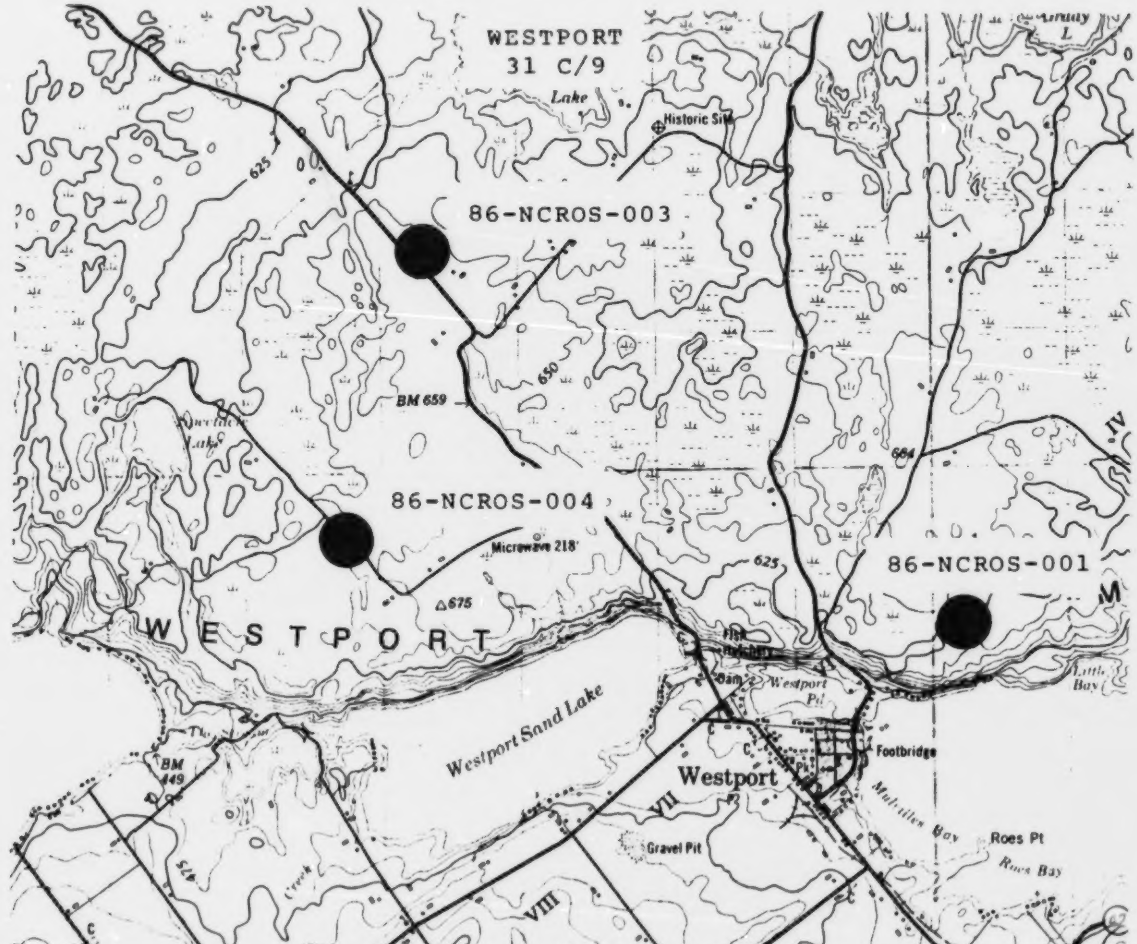

WESTPORT
31 C/9
Lake
Historic Site
86-NCROS-003
625
650
BM 659
86-NCROS-004
Microwave 218'
△675
625
664
IV
86-NCROS-001
M
WESTPORT
Fish Hatchery
Dam
Westport Pt
Westport Sand Lake
Footbridge
Westport
BM 449
VII
Mulvilles Bay
Roes Pt
Roes Bay
Gravel Pit
475
Creek
VIII
BM 548
IX
575
Gravel Pit
BM 475
X
Salem
BEDFORD TP
590
470
450
Blairs Settlement
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
Gravel P
BM 418

Figure B48. Sample locations, Wolfe Lake pluton.

86-NCROS-003

PROPERTY NO. 86-NCROS-003 **PLUTON NAME** Wolfe Lake Pluton

PROPERTY NAME Tommy Lake **COMMERCIAL STONE NAME** Granite

GEOLOGICAL ROCK NAME Monzonite

TOWNSHIP North Crosby **LOT** 19 **CONC.** 6

NTS 31 C/9 **UTM CO-ORDINATES** Easting 386300 Northing 4951650

PROPERTY STATUS Prospect **AIR PHOTO NO.** 78-4450-131-75

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pinkish brown
Weathered Surface Bleached pink
Uniform Variable X

WEATHERING DEPTH

GRAIN SIZE Medium grained Uniform Variable X

TEXTURE Foliated Uniform Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite (sphene)

DELETERIOUS MINERALS Yes X No Type Sulphides Percent 1%

OTHER FEATURES Pegmatite masses comprise about 10% of the volume of this rock. Mafic inclusions, aplite, highly variable grain size and textures are present. Biotite comprises about 15% of this rock, locally as coarse crystals.

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This site, close to the centre of the Wolfe Lake pluton, exhibits intense irregular jointing. The highly variable fabric makes this site of poor potential for building stone development. Other deleterious features include the abundance of biotite (which commonly is coarse grained), pegmatite phases and alteration of biotite.

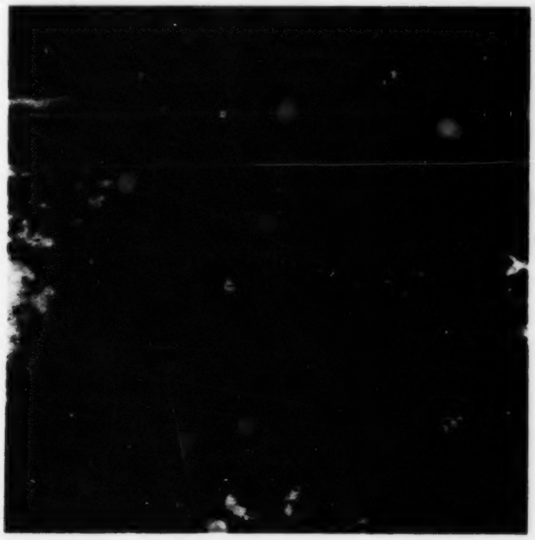


***Photo B60.** Textural close-up depicting coarse biotite crystals. 86-NCROS-003*

86-NCROS-004

PROPERTY NO. 86-NCROS-004 PLUTON NAME Wolfe Lake Pluton

PROPERTY NAME Spectacle Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Monzonite

TOWNSHIP North Crosby LOT 16 CONC. 8

NTS 31 C/9 UTM CO-ORDINATES Easting 385700 Northing 4949600

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4448-88-90

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Pink
Uniform X Variable

WEATHERING DEPTH Extensive

GRAIN SIZE Medium Uniform Variable X

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, sphene; Mafic content: approx. 20 to 30%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Biotite knots, mafic inclusions, pegmatite phases, siliceous inclusions

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a medium-grained, moderately foliated, bleached, pink monzonite. Medium-grained sphene crystals comprise about 2 to 30% of this rock. The most obvious feature at this site is the extensive weathering, which has produced an incompetent, bleached surface layer. Intense irregular jointing limits the building stone potential for this area.

WOLLASTON GRANITE

LOCATION Wollaston Township, north of Highway 620, 5 km west of Coe Hill

NTS 31 C/13 OGS Map 2020 Geological Report 11

SAMPLE SITES 86-WOL-002, 86-WOL-003, 86-WOL-011

DESCRIPTION OF THE AREA
The Wollaston granite is characterized by pink biotite granite to the north and south and grey, gneissic, biotite granite in the centre. One site was visited in the southern part of the pluton and was recognized as a pink biotite granite with a definite foliation striking toward the north and dipping east. Another site, just south of Cranberry Lake, was seen to be slightly more fine grained and more strongly foliated, almost gneissic. The weathering depth at both of these siTES does not appear to be a negative factor.

All areas showed regular and irregular jointing patterns ranging from moderate to intense. The true intensity of the jointing at 86-WOL-002 is difficult to determine because it is a roadcut.

Mineralogy is mainly quartz, potassium feldspar, plagioclase and biotite. In the northern and southern parts of the pluton, quartz pods and stringers were noticed, as well as biotite seams and hematite staining. These features appeared to be absent toward the centre of the pluton. No other deleterious minerals were noticed.

Outcrop exposure in the areas visited is fair.

CONCLUSIONS
The Wollaston granite shows little potential for building stone purposes. Potential quarry size is small and texture over large areas is inconsistent. The centre of the pluton shows more promise than the southern and the northern parts for further investigation.

POTENTIAL

POOR	MODERATE	GOOD
86-WOL-002		
86-WOL-003		
86-WOL-011		

REFERENCE

Hewitt, D.F. 1962. Geology of Wollaston Township, Hastings County, Ontario; Ontario Department of Mines, Geological Report 11, p.29-55.

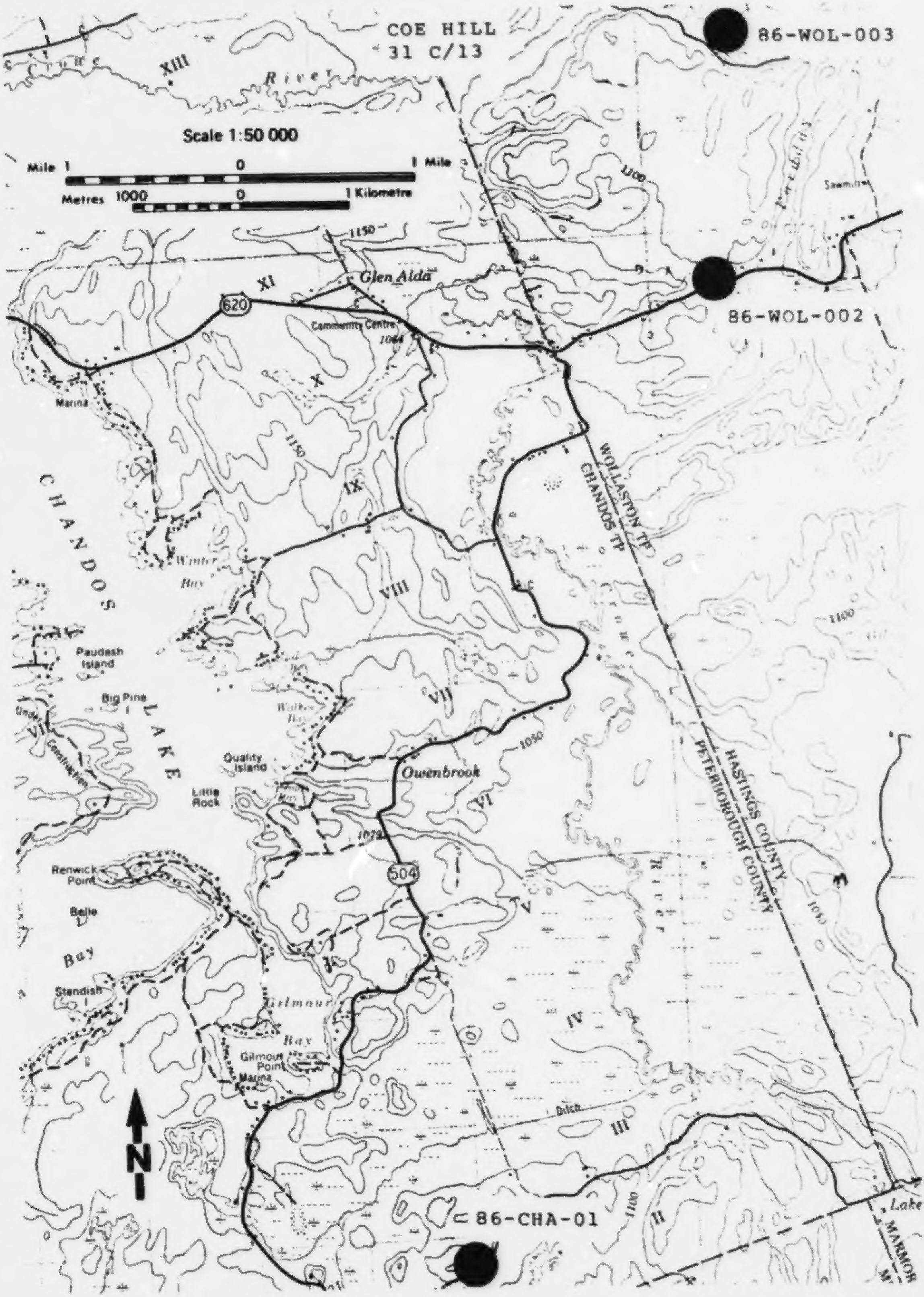

COE HILL
31 C/13
86-WOL-003
86-WOL-002
86-CHA-01
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Crowe River
XIII
XI
X
IX
VIII
VII
VI
V
IV
III
II
Glen Alda
620
Community Centre
Marina
CHANDOS LAKE
Winter Bay
Paudash Island
Big Pine I
Under Construction
Walker Bay
Quality Island
Little Rock
Owenbrook
Renwick Point
Belle I
Bay
Standish I
Gilmour Bay
Gilmour Point
Marina
504
WOLLASTON TP
CHANDOS TP
HASTINGS COUNTY
PETERBOROUGH COUNTY
Crowe River
Sawmill
Ditch
Lake
MARMORA
1150
1100
1064
1050
1079
N

Figure B49. Sample locations, Wollaston granite (sheet 1).

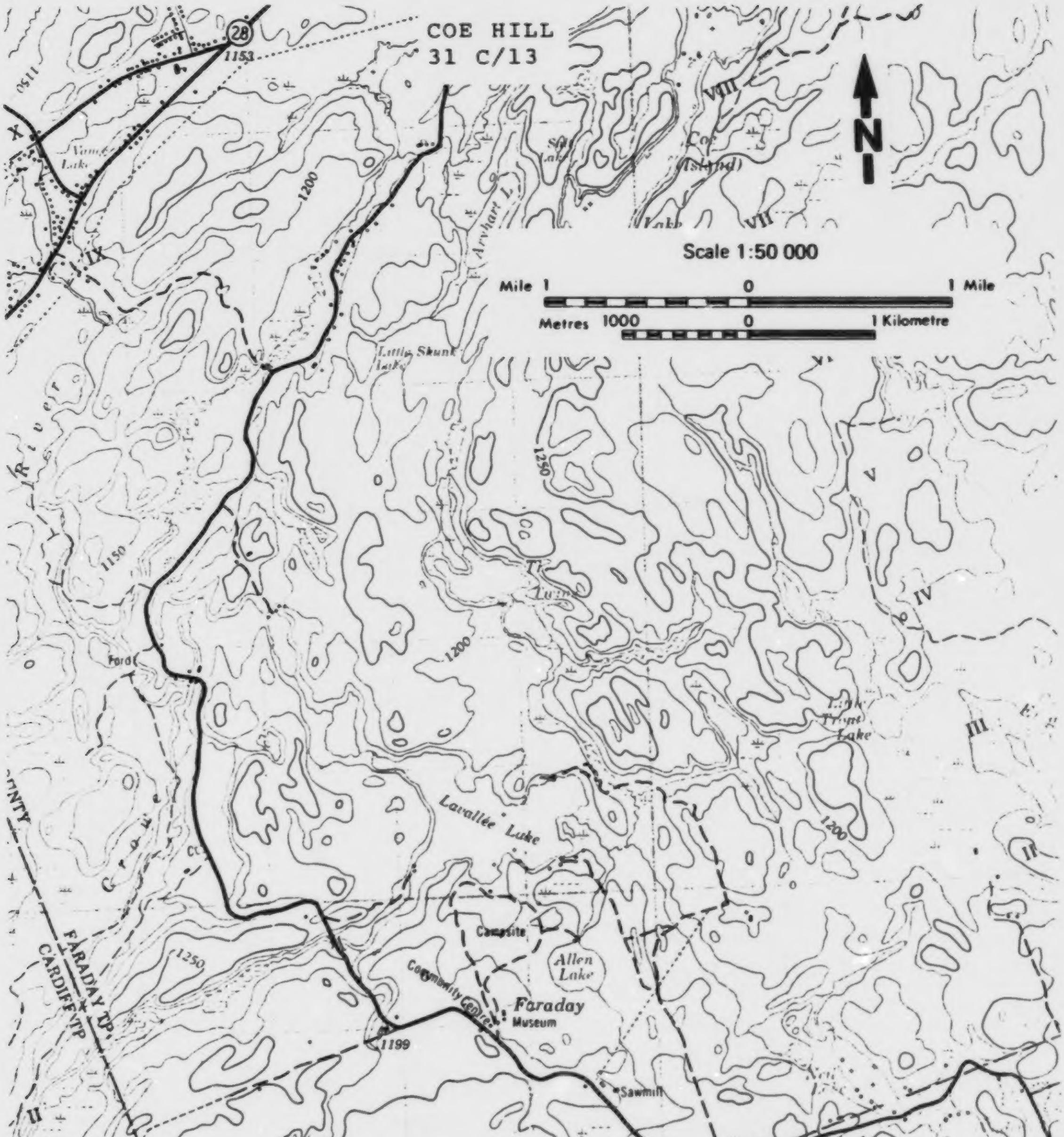

COE HILL
31 C/13
28
1153
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Little Skunk Lake
Arvhart L.
Coe Island
Lavallée Lake
Allen Lake
Faraday
Campsite
Community Centre
Museum
Sawmill
Ford
1199
FARADAY TP.
CARDIFF TP
CARDIFF TP
CHANDOS TP
32
33
24
23
1150
1200
1250
86-WOL-011
X
IX
VIII
VII
V
IV
III
II
I

Figure B50. Sample location, Wollaston granite (sheet 2).

86-WOL-002

PROPERTY NO. 86-WOL-002 PLUTON NAME Wollaston Granite

PROPERTY NAME Coe Hill COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Wollaston LOT 28, 29 CONC. 8

NTS 31 C/13 UTM CO-ORDINATES Easting 370600 Northing 4969550

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4435-74-216

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type Roadcut

COLOUR Fresh Surface Pink
Weathered Surface Light pink
Uniform X Variable

WEATHERING DEPTH Extensive

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. X Strong Strike 20 degrees Dip E
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike 100 degrees Dip Vertical Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Extensive hematite staining, biotite seams, quartz pods, quartz stringers.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This outcrop displays a strong degree of foliation which becomes gneissic in places. Many of the fractures in this rock are hematite stained. Irregular structures such as quartz veins and biotite seams limit the potential of this area for building stone development. The use of explosives at this site prohibits joint interpretation.

86-WOL-003

PROPERTY NO. 86-WOL-003 PLUTON NAME Wollaston Granite

PROPERTY NAME Cranberry Lake COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite to Granite Gneiss

TOWNSHIP Wollaston LOT 25, 26 CONC. 10

NTS 31 C/13 UTM CO-ORDINATES Easting 370800 Northing 4971900

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4436-17-45

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink-black
Weathered Surface Whitish grey
Uniform X Variable

WEATHERING DEPTH 1 mm

GRAIN SIZE Fine to medium Uniform X Variable

TEXTURE Foliated to gneissic Uniform Variable X

FABRIC Yes X No. Weak Mod. Strong X Strike 0 degrees Dip 65 degrees E
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 100 degrees Dip Vertical Spacing ≤1 m
B) Strike 150 degrees Dip 60 degrees W Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY K-spar, quartz, biotite plagioclase

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The inconsistent texture and irregular jointing at this site indicate low building stone potential.

86-WOL-011

PROPERTY NO. 86-WOL-011 PLUTON NAME Wollaston Granite

PROPERTY NAME Rabbit Hill COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Biotite Granite Gneiss

TOWNSHIP Wollaston LOT 21 CONC. 15

NTS 31 C/13 UTM CO-ORDINATES Easting 271450 Northing 4976400

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Dull pink
Weathered Surface Light pink
Uniform Variable X

WEATHERING DEPTH 1 to 1.5 cm

GRAIN SIZE Medium grained Uniform X Variable

TEXTURE Gneissic Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike 88 degrees Dip Vertical
Formed By Alignment of biotite crystals

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, biotite, quartz

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz veins and pods, hematite staining (especially around the mafic grains); intense exfoliation; felsic component is an unattractive bleached colour.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This site is located near the northern margin of the Wollaston granite. The rock here has a dull or bleached colour. Its appearance is further degraded by hematite staining. Intense, irregular jointing limits the building stone potential in this area.

WOLLASTON LAKE GABBRO

LOCATION South part of Wollaston Township, south of Wollaston Lake

NTS 31 C/13 OGS Map 2020 Geological Report 11

SAMPLE SITE 86-WOL-013

DESCRIPTION OF AREA
The intrusion was described by Hewitt (1962, p.41) as follows:

"The Wollaston Lake gabbro is an elongate body 6 km long and up to 1.5 km wide, extending from Wollaston Lake to Castoroil Lake in south-central Wollaston township. Inclusions of gabbro and diorite in the Coe Hill granite indicate that this gabbro body probably extended at least 2 miles farther to the southwest, before the intrusion of the Coe Hill granite.

The body consists of biotitic gabbro, diorite, and metagabbro. The gabbro is medium to coarse grained and consists predominantly of augite and plagioclase, with hornblende, biotite, apatite, and magnetite as accessories. Biotite may occur in porphyroblasts up to 1 inch in diameter."

Sample site 86-WOL-013 shows an intense, irregular joint pattern with numerous quartz and mafic stringers.

CONCLUSIONS
The Wollaston Lake gabbro has little building stone potential.

POTENTIAL

POOR	MODERATE	GOOD
86-WOL-013		

REFERENCE

Hewitt, D.F. 1962. Geology of Wollaston Township; Ontario Department of Mines, Geological Report 11, p.29-55.

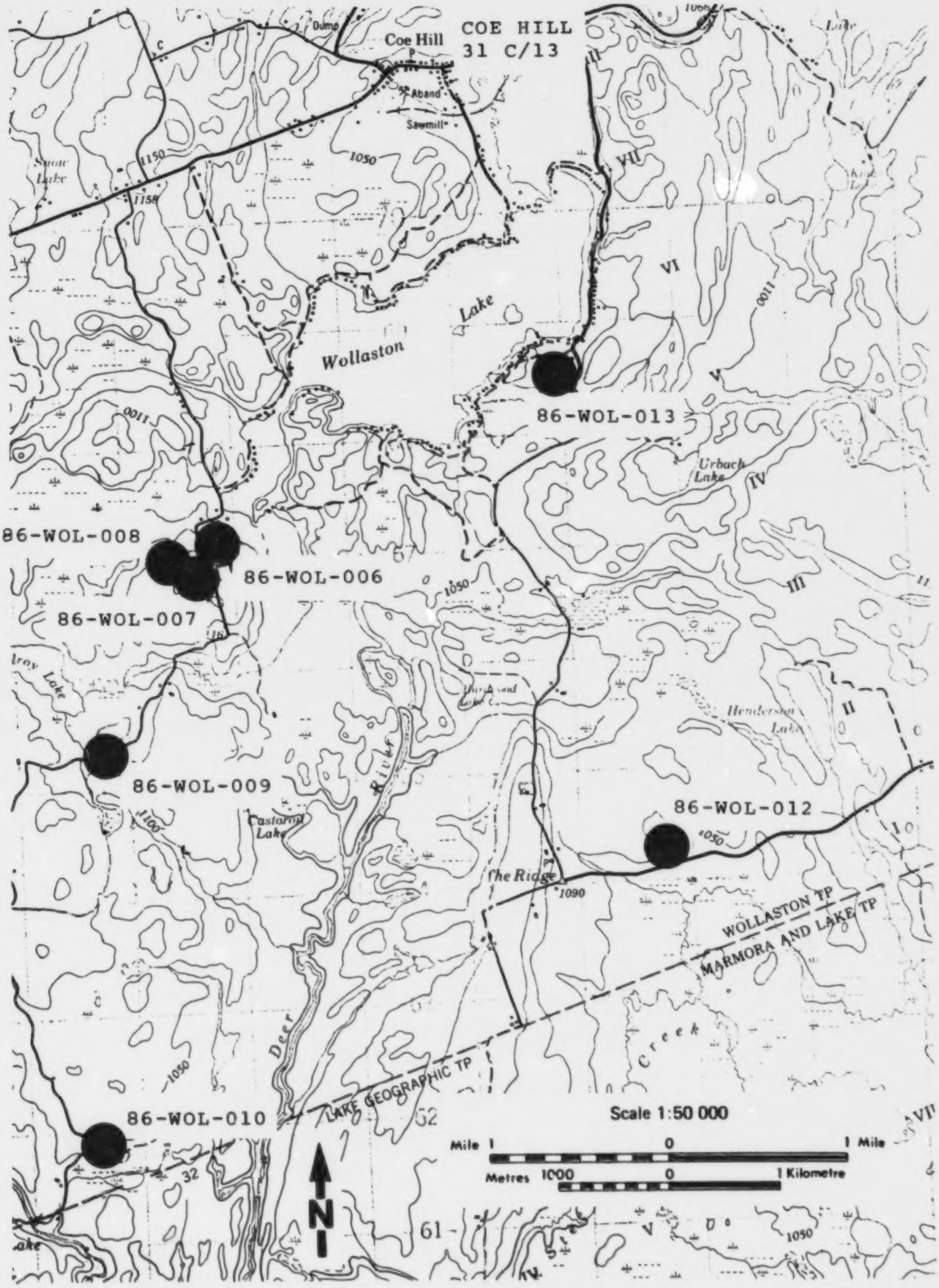

COE HILL
31 C/13
Coe Hill
Dump
Aband
Sawmill
Snow Lake
1150
1050
Wollaston
Lake
VII
VI
V
IV
III
II
86-WOL-013
Urbach Lake
86-WOL-008
86-WOL-006
86-WOL-007
86-WOL-009
86-WOL-012
86-WOL-010
Henderson Lake
Castaron Lake
River
Deer
The Ridge
1090
Creek
WOLLASTON TP
MARMORA AND LAKE TP
LAKE GEOGRAPHIC TP
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
32
61
62

Figure B51. Sample locations, Wollaston Lake gabbro.

86-WOL-013

PROPERTY NO. 86-WOL-013 PLUTON NAME Wollaston Lake Gabbro

PROPERTY NAME Wollaston Lake COMMERCIAL STONE NAME Gabbro

GEOLOGICAL ROCK NAME Gabbro

TOWNSHIP Wollaston LOT 16 CONC. 5

NTS 31 C/13 UTM CO-ORDINATES Easting 276900 Northing 4968500

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4435-74-220

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Salt and pepper
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH Minimal

GRAIN SIZE Medium Uniform Variable X

TEXTURE Massive Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Plagioclase, amphibole; Mafic content: approx. 60%

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Quartz stringers and veins (5 mm to 2 cm width and numerous). One aplite dike 10 cm width. Mafic stringers very competent.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This outcrop is part of the Wollaston Lake gabbro. The rock is medium grained, massive and has the typical salt and pepper appearance. The mafics comprise over 60% of the rock, hence, the colour is quite dark. The numerous quartz and mafic stringers as well as the intense irregular jointing limit the potential for building stone development at this site. The grain size is variable at the outcrop scale.

86-CHA-001

PROPERTY NO. 86-CHA-001 PLUTON NAME

PROPERTY NAME Laswade 1 mile E. COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Red Granite

TOWNSHIP Chandos LOT 24 CONC. 2

NTS 31 C/13 UTM CO-ORDINATES Easting 267900 Northing 4960800

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Pink
Weathered Surface Grey pink
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Fine to medium Uniform X Variable

TEXTURE Massive to slightly foliated Uniform Variable X

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Biotite, K-spar, quartz

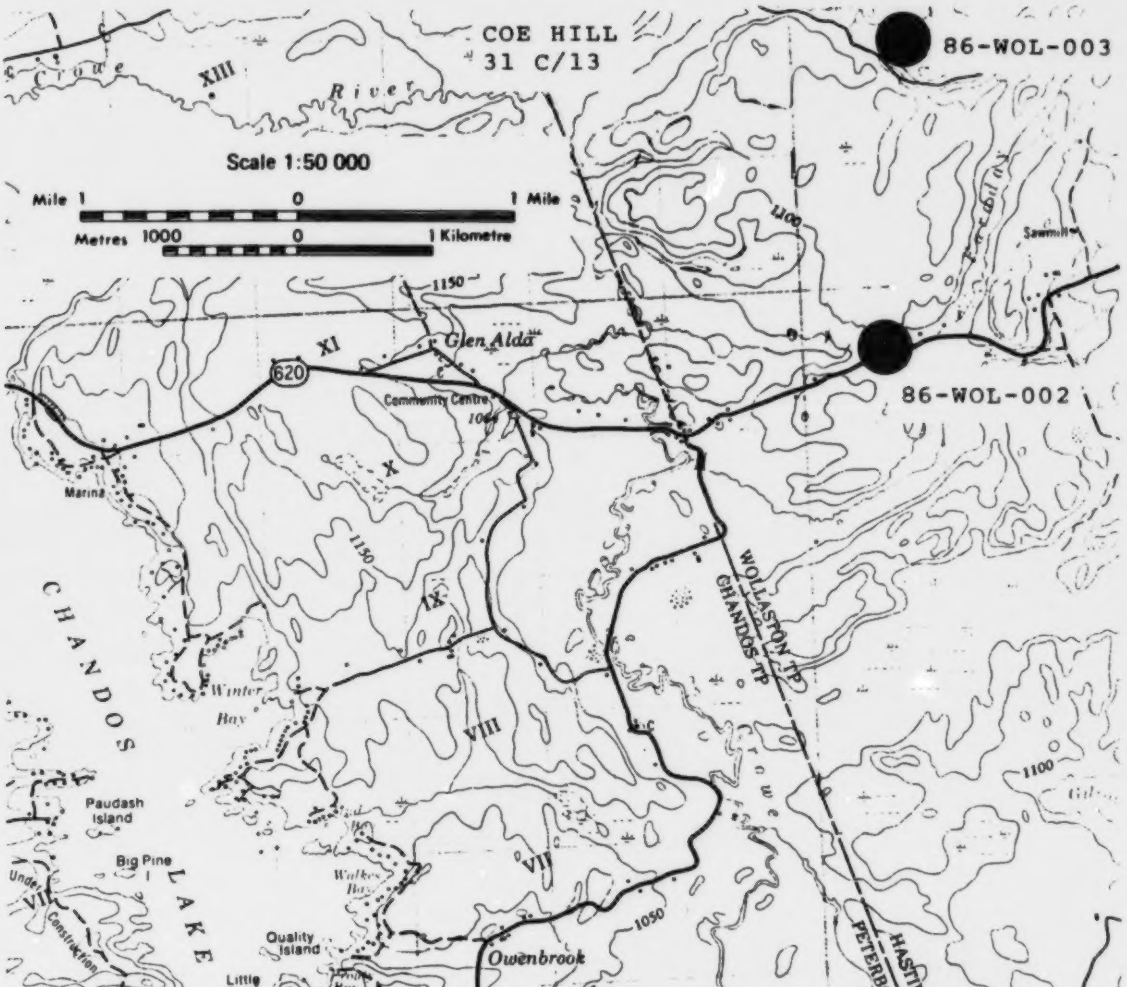
DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Severe horizontal jointing, abundant quartz stringers.

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The granite found on this property appears to have little potential for building stone applications mainly due to severe horizontal jointing and abundant quartz stringers. The rock itself is massive to slightly foliated and medium to fine grained.



COE HILL
31 C/13
86-WOL-003
86-WOL-002
86-CHA-01
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
Crowe River
XIII
XI
X
IX
VIII
VII
VI
V
IV
III
II
620
504
Glen Alda
Community Centre
Marina
CHANDOS LAKE
Winter Bay
Paudash Island
Big Pine
Under Construction
Quality Island
Little Rock
Walkes Bay
Owenbrook
Renwick Point
Belle Bay
Standish
Gilmour Bay
Gilmour Point
Marina
WOLLASTON TP
CHANDOS TP
HASTINGS COUNTY
PETERBOROUGH COUNTY
Crowe River
Sawmill
Ditch
1150
1100
1050
1079
Lake
MARMOR
N

Figure B52. Sample location, Chandos Township.

86-HUN-001

PROPERTY NO. 86-HUN-001 PLUTON NAME

PROPERTY NAME Moira Lake South COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Granite

TOWNSHIP Hungerford LOT 12 CONC. 12

NTS 31 C/6 UTM CO-ORDINATES Easting 304500 Northing 4926500

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4433-139-128

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No Type

COLOUR Fresh Surface Pink (light)
Weathered Surface Brownish pink
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Medium grained Uniform X Variable (X)

TEXTURE Massive Uniform Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 155 degrees Dip Vertical Spacing 0.1 to 1.0 m
B) Strike 36 degrees Dip 20 NWW Spacing 0.1 to 1.0 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, amphibole, (chlorite)

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES

POSSIBLE USES Crushed stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The rock from the south-central shore of Moira Lake is a medium-grained granite. The intense jointing and presence of chlorite diminish the building stone potential for this area.

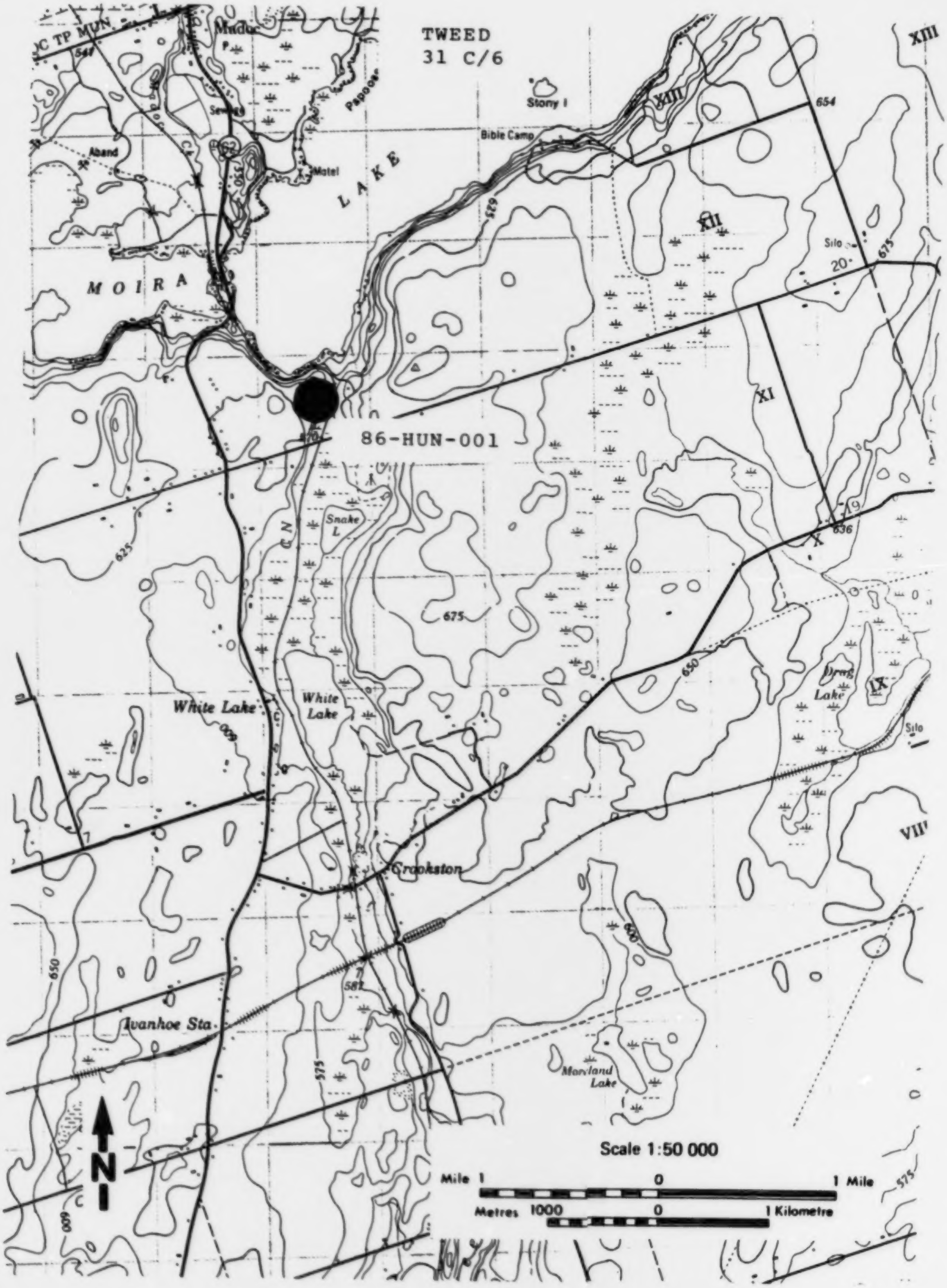

TWEED
31 C/6
86-HUN-001
MOIRA
LAKE
Madoc
Stony I
Bible Camp
Aband
Motel
Snake L
White Lake
White Lake
Crookston
Ivanhoe Sta
Drag Lake
Moreland Lake
Silo
XIII
XII
XI
X
IX
VIII
654
675
625
650
636
600
575
582
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B53. Sample location, Hungerford Township.

PROPERTY NO. 86-LIM-001 PLUTON NAME Sinclair Complex

PROPERTY NAME Eganccreek B.M. COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Trondhjemite

TOWNSHIP Limerick LOT 23 CONC. 15

NTS 31 C/13 UTM CO-ORDINATES Easting 384600 Northing 4980700

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4439-16-165

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes No Type

COLOUR Fresh Surface Light grey
Weathered Surface Brown grey
Uniform X Variable

WEATHERING DEPTH 0.3 cm

GRAIN SIZE Fine to medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 85 degrees
Dip ?
Formed By Alignment of biotite

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern X
Limited Jointing Moderate Jointing X to Intensive Jointing X

A) Strike 140 degrees	Dip vertical	Spacing 2 to 3 m
B) Strike 30 degrees	Dip vertical	Spacing 1 m
C) Strike horizontal	Dip 0 degrees	Spacing 0.5 to 1.5 m
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Feldspar, quartz, biotite

DELETERIOUS MINERALS Yes X No Type Biotite phenocrysts Percent 10%

OTHER FEATURES Quartz pods, biotite knots, quartz veins, sheeting

POSSIBLE USES Ashlar, crushed stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This rock is a fine- to medium-grained, strongly foliated, grey biotite trondhjemite. The outcrop exposure is extensive. Quartz veins and pods, exfoliation planes and moderate to intensive jointing occur at this location.

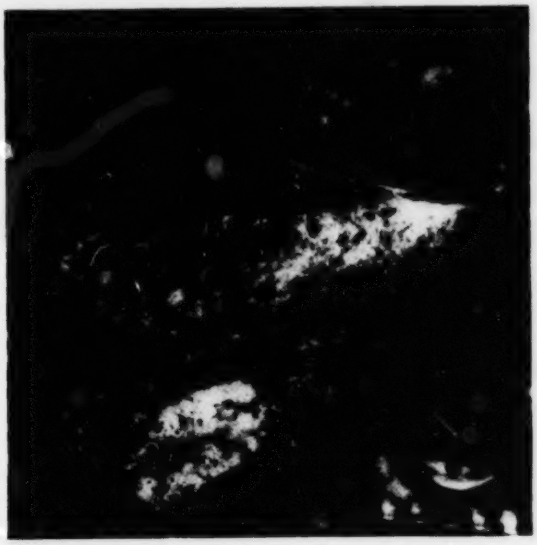


Photo B61. Light grey, fine- to medium-grained trondhjemite. 86-LIM-001

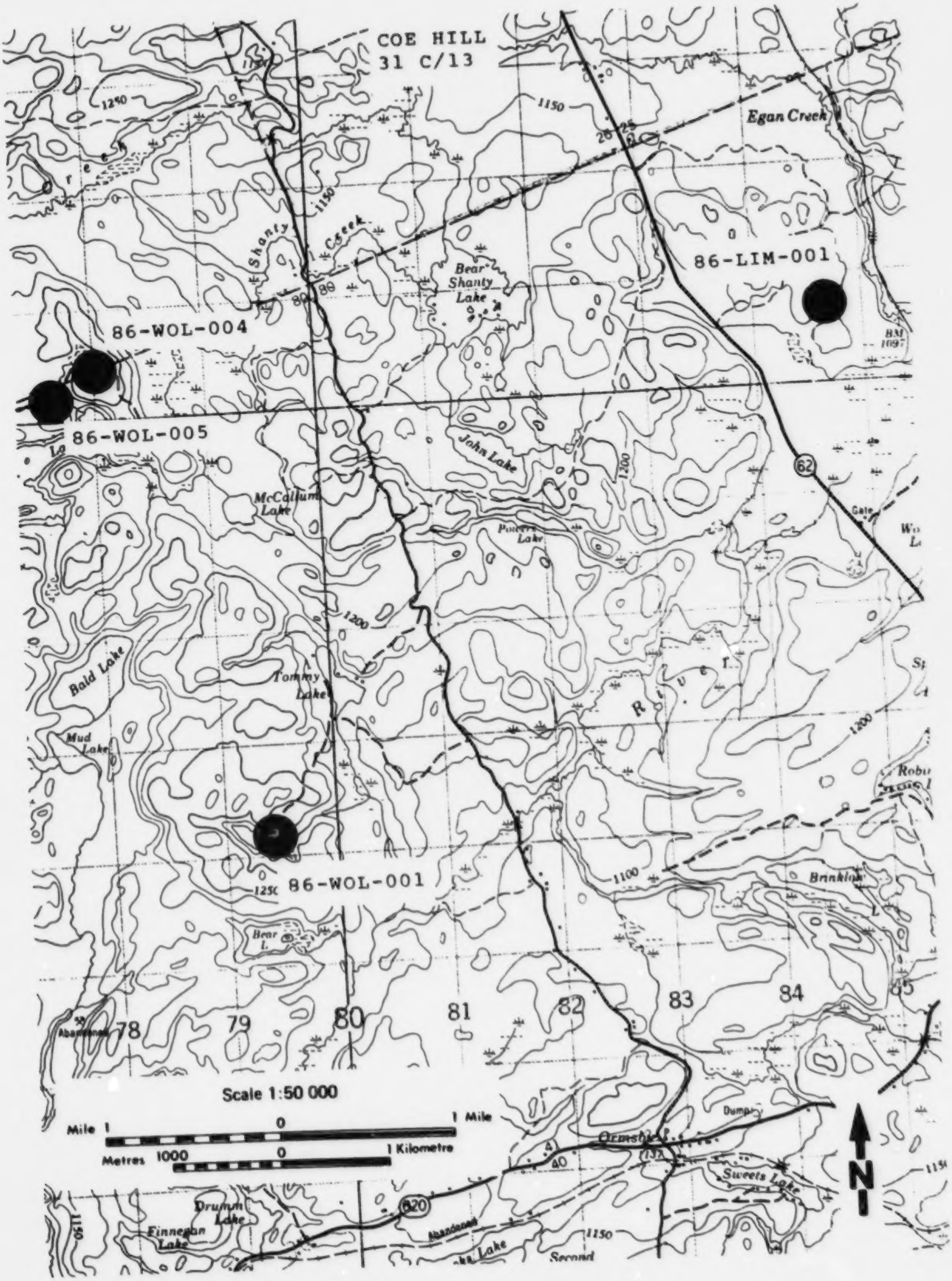

COE HILL
31 C/13
86-LIM-001
86-WOL-004
86-WOL-005
86-WOL-001
Egan Creek
Shanty Creek
Bear Shanty Lake
John Lake
McCallum Lake
Potters Lake
Bald Lake
Tommy Lake
Mud Lake
Bear L.
River
Brinklow L.
Ormsby
Sweets Lake
Drumm Lake
Finnegan Lake
Dump
Gate
Abandoned
Second
62
620
132
1150
1200
1100
1250
78
79
80
81
82
83
84
85
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B54. Sample location, Limerick Township.

86-MAD-031

PROPERTY NO. 86-MAD-031 PLUTON NAME

PROPERTY NAME Hwy 23 COMMERCIAL STONE NAME Porphyry

GEOLOGICAL ROCK NAME Granite Porphyry

TOWNSHIP Madoc LOT 2 CONC. 4

NTS 31 C/12 UTM CO-ORDINATES Easting 301200 Northing 4930800

PROPERTY STATUS Inactive-farm AIR PHOTO NO. 78-4435-136-124

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Almost black with pink spots
Weathered Surface Pink-grey
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Fine-grained groundmass Uniform X Variable

TEXTURE Porphyritic Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing

A) Strike 65 degrees	Dip 60 degrees S.	Spacing 0.5 m
B) Strike 180 degrees	Dip 65 degrees W.	Spacing 0.5 m
C) Strike	Dip	Spacing
D) Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair-poor

MINERALOGY K-spar

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some quartz pods and stringers

POSSIBLE USES Ashlar, curbing stone, paving stone, crushed aggregate

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This outcrop displays a porphyritic andesite consisting of large potassium feldspar phenocrysts in a dark, fine-grained groundmass. The outcrop appears to have irregular, moderate jointing but limited exposure prevents complete analysis of the joint pattern. Some quartz pods and stringers were noted in the area. The rock is very dark, almost black, with pink spots.

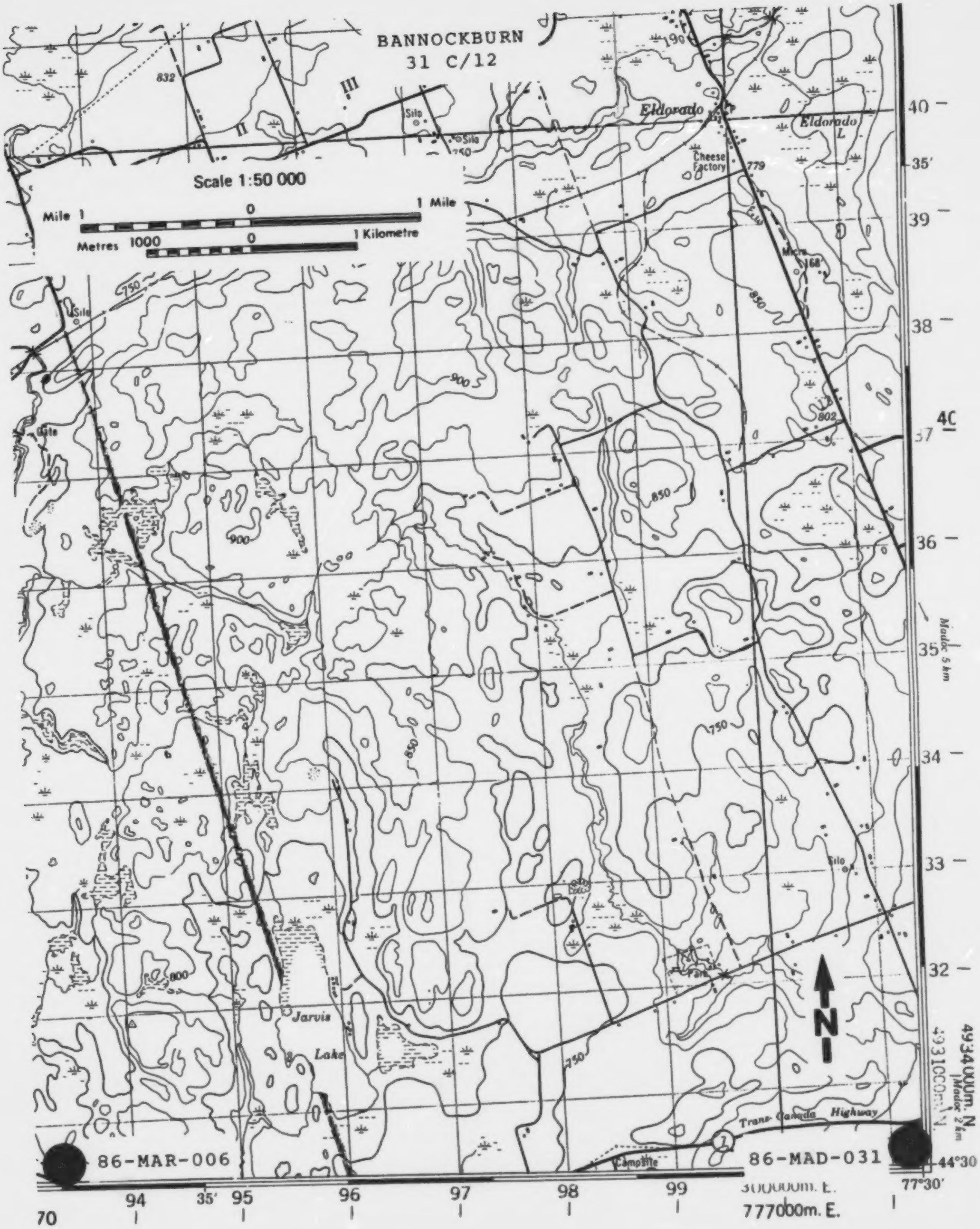

BANNOCKBURN
31 C/12
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Eldorado
Eldorado L
Cheese Factory
Silo
Jarvis
Lake
Trans Canada Highway
Campsite
Madoc 5 km
Madoc 2 km
N
86-MAR-006
86-MAD-031
40
39
38
37
36
35
34
33
32
35'
4934000m. N.
4931000m. N.
44°30
77°30'
70
94
35'
95
96
97
98
99
300000m. E.
777000m. E.
750
800
850
900

Figure B55. Sample locations, Madoc Township.

86-OLD-025

PROPERTY NO. 86-OLD-025 PLUTON NAME

PROPERTY NAME SW of Gibbs Garage COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Pegmatite

TOWNSHIP Olden LOT 17 CONC. 2

NTS 31 C/15 UTM CO-ORDINATES Easting 351800 Northing 4957000

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4453-162-129,130,131
78-4452-157-72,73,74

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Whitish grey
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH 1 cm

GRAIN SIZE Coarse Uniform X Variable

TEXTURE Pegmatitic Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 60 degrees Dip Vertical Spacing 2 m
B) Strike 180 degrees Dip Vertical Spacing 3 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Good

MINERALOGY Alkali feldspar, quartz, biotite, garnet

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some quartz stringers

POSSIBLE USES Architectural stone, ornamental stone, structural stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This pegmatite is very impressive in both extent and jointing pattern. The outcrop area appears quite large and jointing is very regular and moderate. The grain size is extremely coarse and consists of alkali feldspar, quartz, biotite and garnet. Grain size appears predominantly uniform, as does texture. The colour is mainly very light due to the feldspar and quartz but the garnet and biotite cause darker areas. The outcrop is generally free of deleterious features but some quartz stringers were observed. This area warrants further investigation.

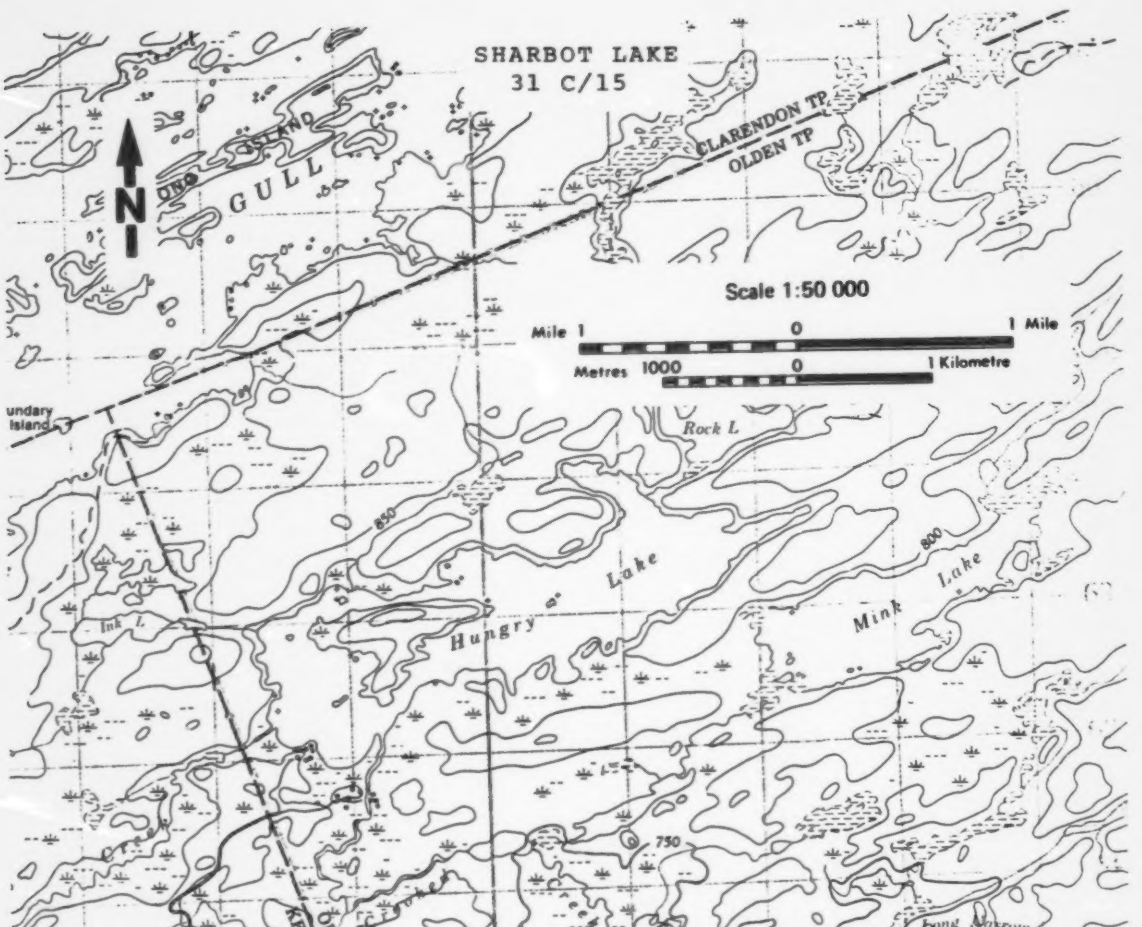

SHARBOT LAKE
31 C/15
N
GULL
ISLAND
CLARENDON TP
OLDEN TP
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
Boundary Island
Rock L.
Ink L.
Hungry Lake
Mink Lake
Crooked Creek
OLDEN TP
KENNEBEC TP
Long Narrow L.
Bass L.
Cox's Lake
Kennebec Lake
850
800
750
700
IV
III
II
I
XI
X
86-KEN-030
86-OLD-25
86-OLD-26
Sawmill
7
703
47
48 55'
49
50
51
52
53
54
Kaladar 20 km
Mountain Grove 2 km

Figure B56. Sample locations, Olden Township.

86-WOL-001

PROPERTY NO. 86-WOL-001 PLUTON NAME Small Intrusion South of Bald and Tommy Lakes

PROPERTY NAME Tommy Lake South COMMERCIAL STONE NAME Granite

GEOLOGICAL ROCK NAME Gabbro/Anorthosite

TOWNSHIP Wollaston LOT 3 CONC. 12

NTS 31 C/13 UTM CO-ORDINATES Easting 379550 Northing 4976200

PROPERTY STATUS Prospect AIR PHOTO NO. 77-4438-16-29

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes No X Type

COLOUR Fresh Surface Black
Weathered Surface Light grey
Uniform X Variable

WEATHERING DEPTH 1 to 2 mm

GRAIN SIZE Medium to coarse Uniform X Variable

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern (X) Irregular Pattern (X)
Limited Jointing Moderate Jointing (X) Intensive Jointing
A) Strike 0 degrees Dip 56 degrees W Spacing 0.1 to 2 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair for small blocks

MINERALOGY Feldspar, amphibole

DELETERIOUS MINERALS Yes No X Type Percent Trace

OTHER FEATURES Mafic content is variable

POSSIBLE USES Monumental stone, ashlar, crushed stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS Outcrop exposure is poor at this location, making assessment difficult. Jointing is both regular and irregular with moderate spacing. Since the stone is black in colour, further evaluation of this area is warranted.

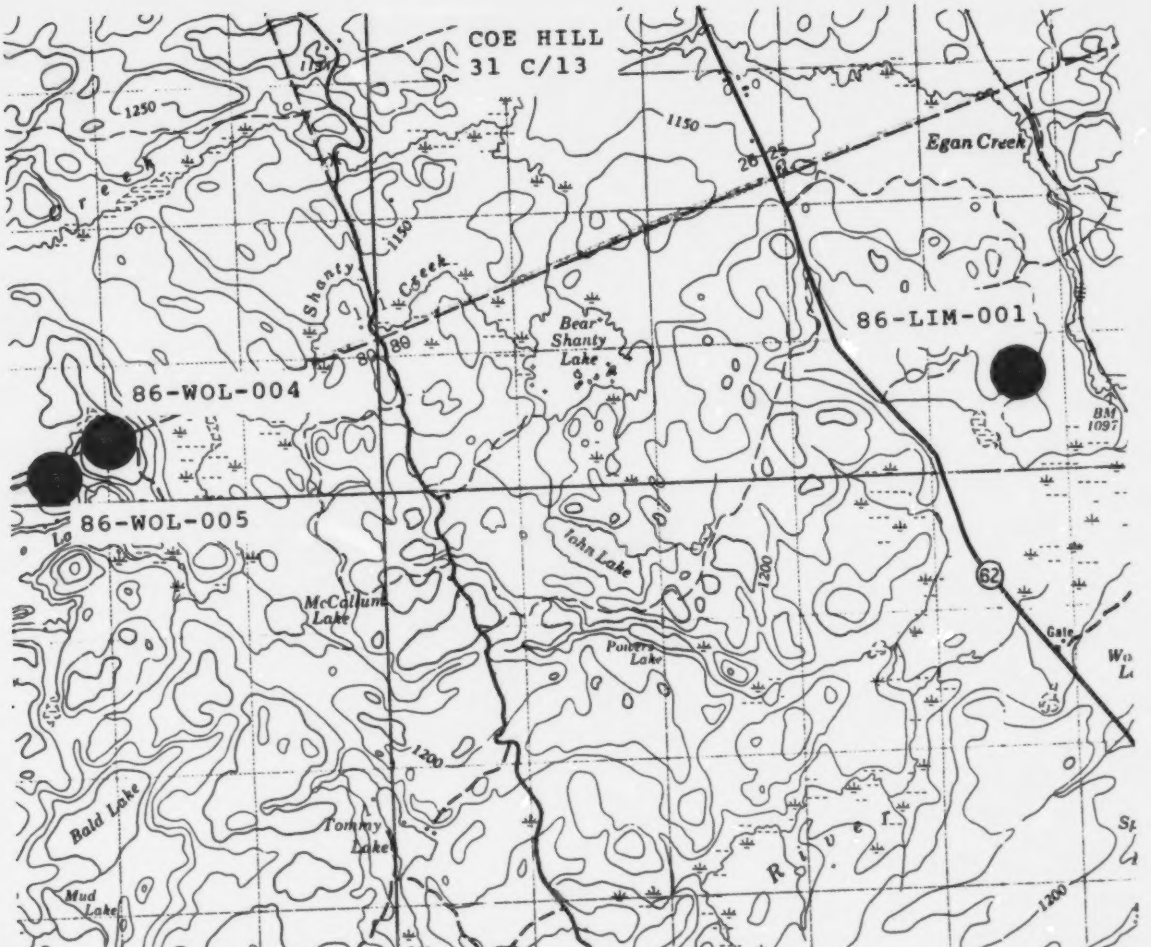

COE HILL
31 C/13
86-LIM-001
86-WOL-004
86-WOL-005
86-WOL-001
Egan Creek
Shanty Creek
Bear Shanty Lake
John Lake
McCallum Lake
Powers Lake
Bald Lake
Tommy Lake
Mud Lake
Bear L.
River
Brinklow
Ormsby
Sweets Lake
Drumm Lake
Finnegan Lake
Second
62
620
132
78
79
80
81
82
83
84
85
1250
1150
1200
1100
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N

Figure B57. Sample locations, Wollaston Township.

Appendix B. 1986 Property Examination Reports—Marble Properties

86-CL-001

PROPERTY NO. 86-CLA-001 PLUTON NAME

PROPERTY NAME Swamp Creek COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Calcitic Marble

TOWNSHIP Clarendon LOT 31 CONC. E & W Range

NTS 31 C/15 UTM CO-ORDINATES Easting 346250 Northing 4977700

PROPERTY STATUS Prospect AIR PHOTO NO. 78-4465-80-51,52

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High velocity - roadcut

COLOUR Fresh Surface White-greenish-pink-brown banded
Weathered Surface Grey
Uniform Variable X

WEATHERING DEPTH

GRAIN SIZE Fine to medium to coarse Uniform Variable X

TEXTURE Foliated Uniform Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 55 degrees Dip N
Formed By Foliation

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 75 degrees Dip 55 degrees N Spacing 2 m
B) Strike 140 degrees Dip Vertical Spacing 2 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Good

MINERALOGY Calcite, minor phlogopite and tremolite

DELETERIOUS MINERALS Yes X No Type Pyrite, sphalerite Percent Trace

OTHER FEATURES Stringers of quartz, boudinage and brecciation.

POSSIBLE USES Architectural stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This stone is a highly foliated calcitic marble breccia. Due to stretching of the fragments, textures vary from coarse, fragmental when viewed perpendicular to the foliation, to irregularly banded when viewed parallel to the foliation. Colour also varies from mottled brownish-grey and white at the southern end of the road cut, to pink-grey-white at the northern end. The interesting textures and colours and potential for large quarry blocks suggest that further investigation of this area is warranted.

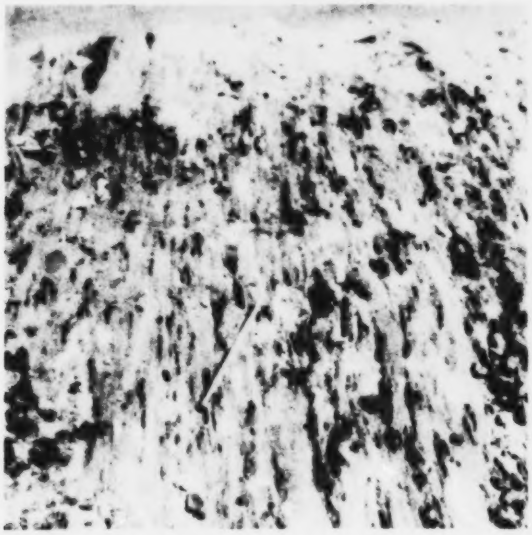


Photo B62. View showing texture of weathered surface. Pencil for scale. 86-CLA-001

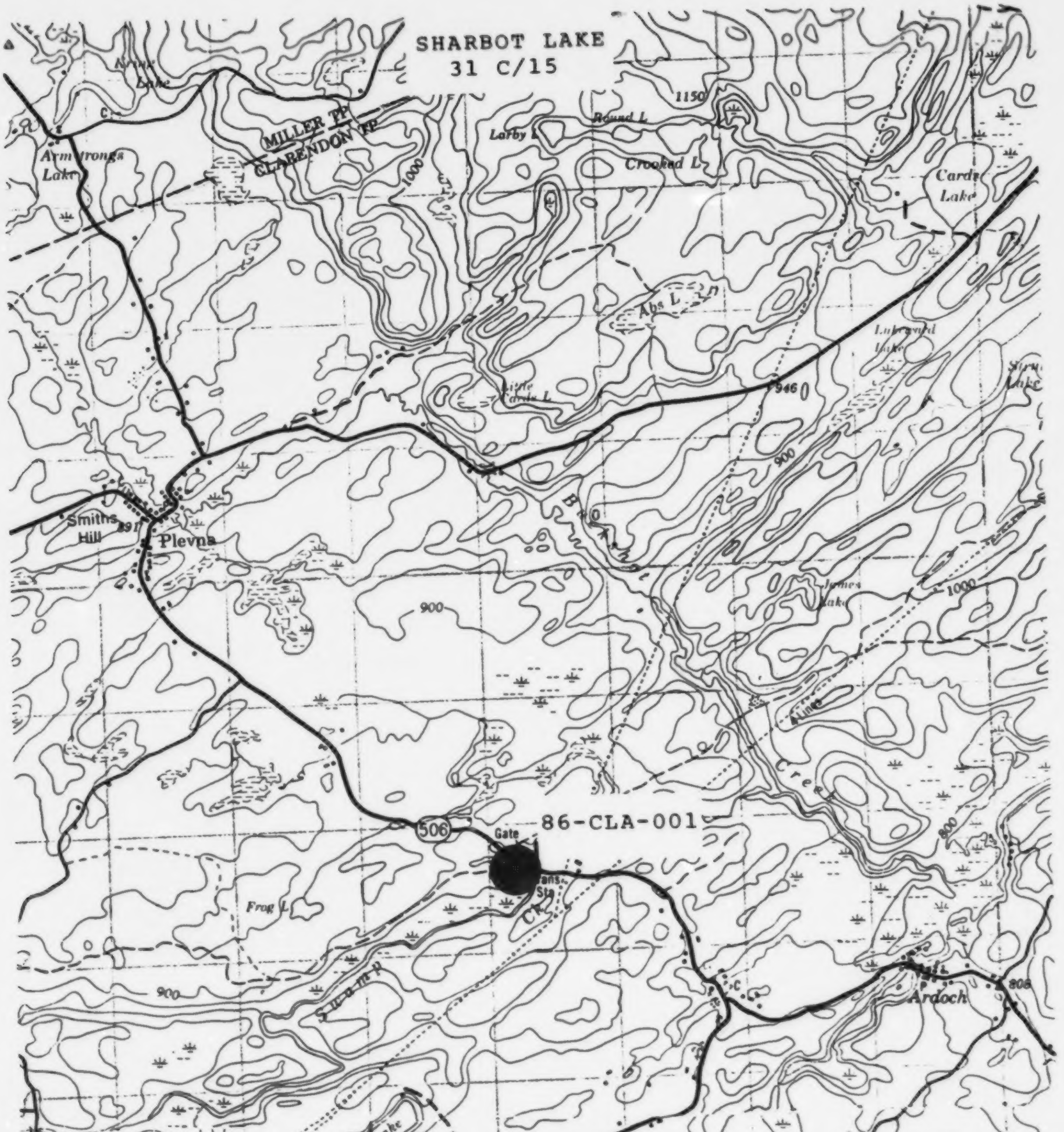

SHARBOT LAKE
31 C/15
MILLER TP
CLARENDON TP
Armstrongs Lake
Larby L.
Round L.
Crooked L.
Cards Lake
Abs L.
Lakeward Lake
Little Cards L.
Smiths Hill
Plevna
James Lake
Frog L.
Swaugers Lake
Ardoch
Fernleigh
Dump
Gate
506
86-CLA-001
900
1000
1150
800
950
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B58. Sample location, 86-CLA-001.

86-DUN-001

PROPERTY NO. 86-DUN-001 PLUTON NAME

PROPERTY NAME L'Amable COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Stromatolitic Marble

TOWNSHIP Dungannon LOT 31 CONC. E. Range

NTS 31 F/4 UTM CO-ORDINATES Easting 280200 Northing 4988450

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High velocity - roadcut

COLOUR Fresh Surface Banded pale grey and brown
Weathered Surface Buff to brown
Uniform X Variable

WEATHERING DEPTH 1 m weathered cap; otherwise negligible

GRAIN SIZE Fine to medium Uniform X Variable

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong Strike Dip 10 degrees E (variable)
Formed By relict bedding-contorted

BEDDING Yes X No Strike Dip Avg. Thickness 1 to 2 cm

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing X
A) Strike 125 degrees Dip 80 degrees W. Spacing 0.5 m
B) Strike 360 degrees ,Dip 70 degrees E. Spacing 1 m
C) Strike 360 degrees Dip 10 degrees E. Spacing 1 m
D) Strike 65 degrees Dip 50 degrees N. Spacing 2 m

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Calcite, brown bands contain 5 to 10% fine phlogopite; grey bands 1% graphite; minor serpentine.

DELETERIOUS MINERALS Yes X No Type Sulphides Percent 1%

OTHER FEATURES Quartz veining; pitted, rusty weathering (pyrite); 1 m weathered cap.

POSSIBLE USES Ornamental, terrazzo

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS The polished stone is quite attractive but weathers poorly, limiting uses to interior ornamental stone or terrazzo.

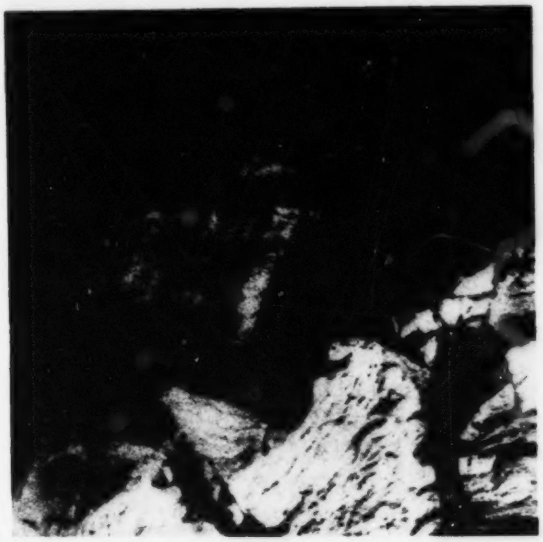


Photo B63. Banding and jointing in marble roadcut. 86-DUN-001

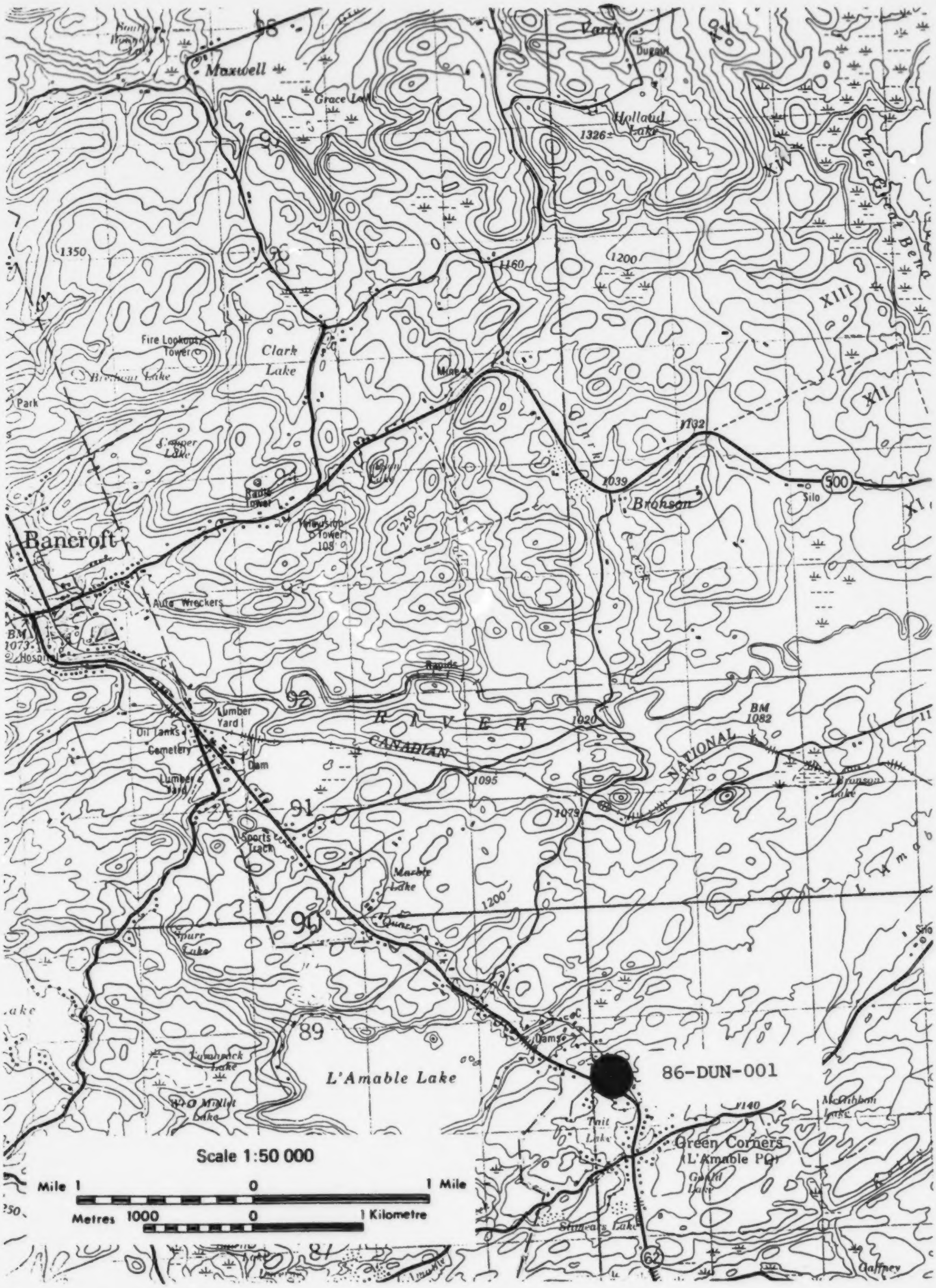

Maxwell
Grace Lake
Vardy
Dugald
Holland Lake
1326
The Great Bend
XIII
XII
XI
1350
1160
1200
Fire Lookout Tower
Clark Lake
Mine
Park
1132
Bronson
500
Silo
1039
Bancroft
Radio Tower
Television Tower
1250
Auto Wreckers
BM 1073
Hospital
Rapids
92
RIVER
CANADIAN
1020
NATIONAL
BM 1082
Bronson Lake
Lumber Yard
Oil Tanks
Cemetery
Dam
Lumber Yard
91
1095
1079
Sports Track
Marble Lake
1200
90
Quarry
Spurr Lake
89
Dams
Tamarack Lake
L'Amable Lake
86-DUN-001
1140
McGibbon Lake
Tait Lake
Green Corners
(L'Amable PO)
Gould Lake
Stewarts Lake
62
Gaffney
87
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B59. Sample location, 86-DUN-001.

86-FAR-020

PROPERTY NO. 86-FAR-020

PLUTON NAME

PROPERTY NAME Barker Bancroft Brown Marble

COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Brown Breccia

TOWNSHIP Faraday

LOT 41 CONC. 9

NTS 31 F/4 UTM CO-ORDINATES Easting 277500 Northing 4989500

PROPERTY STATUS Inactive

AIR PHOTO NO.

PRODUCTION HISTORY Former quarry (Barker)

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface White brown patches
Weathered Surface Brownish grey
Uniform Variable X

WEATHERING DEPTH Negligible

GRAIN SIZE Fine to coarse Uniform Variable X

TEXTURE Foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Foliation

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing

A)	Strike 20 degrees	Dip 45 degrees NW	Spacing 2 m
B)	Strike Horizontal	Dip	Spacing 1.3 m
C)	Strike 90 degrees	Dip 70 degrees	Spacing
D)	Strike	Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Calcite

DELETERIOUS MINERALS Yes X No Type Phlogopite Percent <5%

OTHER FEATURES Some large patches of phlogopite.

POSSIBLE USES Architectural stone, ashlar, landscaping stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The marble breccia found at this site is for the most part a brown and white patchy colour that does not appear very uniform throughout the outcrop area. The rock is foliated and is fine to coarse grained. The jointing is regular and moderate with 2 m spacing. Also present is horizontal jointing at about 1.5 m spacings. The outcrop area is fairly good and accessible from Highway 62. Some fairly large patches of phlogopite were noted and may decrease the potential of the stone. Farther to the south is another quarry face and this area may warrant further investigation.

Photo B64. View showing potential block size from one of the brown breccia pits. 86-FAR-020

86-FAR-021

PROPERTY NO. 86-FAR-021

PLUTON NAME

PROPERTY NAME Bancroft pink marble

COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Pink Calcitic Marble

TOWNSHIP Faraday

LOT 41

CONC. 9

NTS 31 F/4

UTM CO-ORDINATES Easting 277500 Northing 4989500

PROPERTY STATUS Inactive

AIR PHOTO NO.

PRODUCTION HISTORY Former marble quarry (Barker)

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface Pale pink to dark pink with variable white-black bands
Weathered Surface Grey-brown
Uniform Variable X

WEATHERING DEPTH Negligible

GRAIN SIZE Medium Uniform X Variable

TEXTURE Foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. Strong X Strike 30 degrees Dip
Formed By Foliation

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing

A)	Strike	140 degrees	Dip	Vertical	Spacing	1 m
B)	Strike	Horizontal	Dip		Spacing	1 m
C)	Strike		Dip		Spacing	
D)	Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Calcite, phlogopite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Some quartz veining, banding variable, as is colour.

POSSIBLE USES Ornamental stone, architectural stone, landscaping stone, terrazzo chips

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS The rock appears to be quite attractive due to pink, white and black banding. Unfortunately, the banding appears to be variable and large areas of homogeneous texture are difficult to find. Jointing is not optimal and is difficult to determine due to overburden. The attractiveness of this stone is such that the area warrants further investigation. Some quartz veining was noticed in the area.

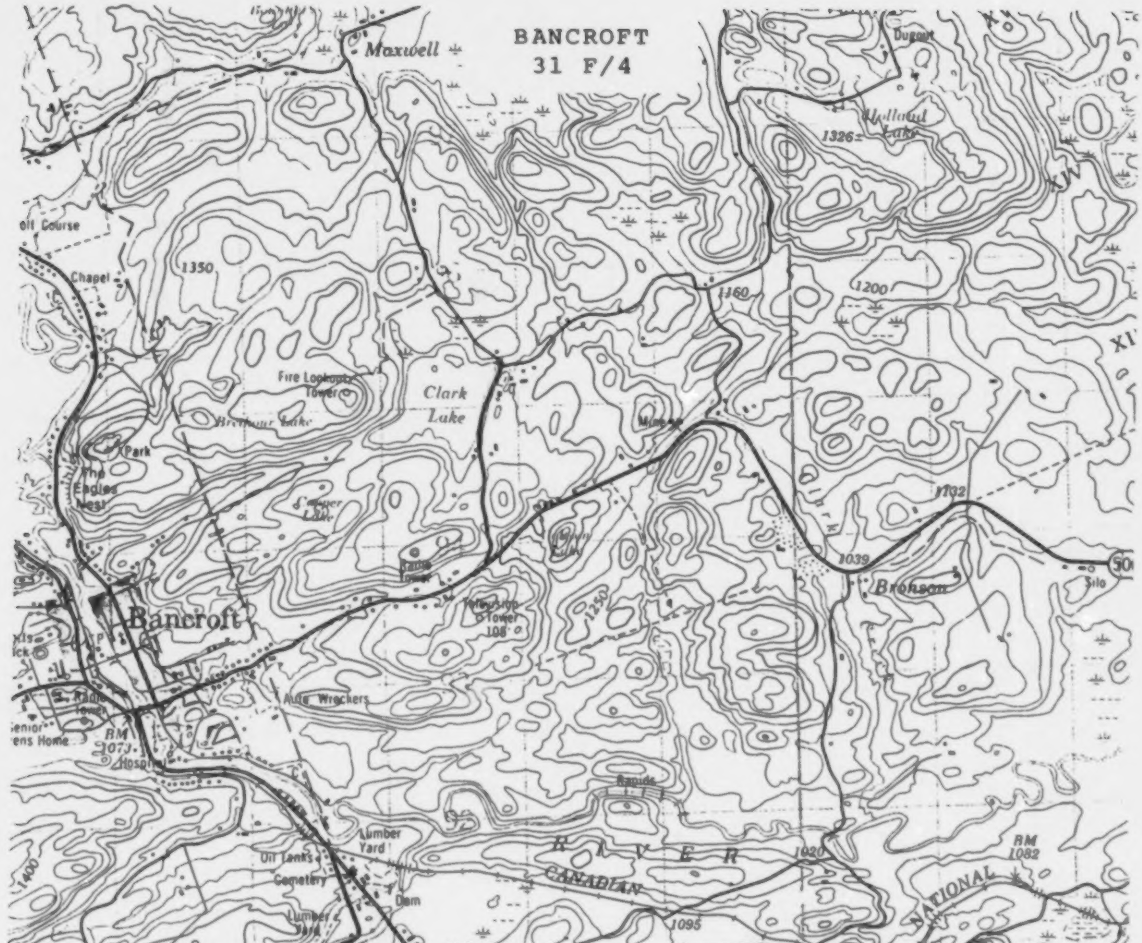

BANCROFT
31 F/4
Maxwell
Bancroft
Clark Lake
Fire Lookout Tower
Bronson
Mine
RIVER
CANADIAN
NATIONAL
Rapids
Lumber Yard
Oil Tanks
Cemetery
Dam
Sports Track
Auto Wreckers
Hospital
Chapel
The Eagles Nest
Park
1350
1326±
1160
1200
1132
1039
1250
1020
1095
1079
BM 1082
1161±
Bay Lake
86-FAR-020
86-FAR-021
L'Amable Lake
Gravel Pit
1140
Green Corners
L'Amable PO
Tait Lake
Dump
62
Silo
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
TN

Figure B60. Sample locations, 86-FAR-020, 86-FAR-021.

86-KEN-030

PROPERTY NO. 86-KEN-030 PLUTON NAME

PROPERTY NAME Baker Valley on Hwy. 7 COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Dolomitic Marble

TOWNSHIP Kennebec LOT 19 NW 1/4 CONC. 10

NTS 31 C/15 UTM CO-ORDINATES Easting 348300 Northing 4956900

PROPERTY STATUS Roadcut AIR PHOTO NO. 78-4452-157-70

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface White
Weathered Surface Dull white greyish
Uniform Variable X

WEATHERING DEPTH Nil

GRAIN SIZE Fine to coarse Uniform X Variable

TEXTURE Foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Foliation

BEDDING Yes X No Strike Dip Avg. Thickness 1.5 m

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair to poor

MINERALOGY Dolomite, tremolite, phlogopite

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Subparallel lineations; local coarse tremolite patches.

POSSIBLE USES Ashlar, structural stone, landscaping stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is a highly foliated dolomitic marble. For the most part it is whitish brown on the fresh surface, the brown being the result of bands of fine-grained phlogopite. The stone may also appear greenish in some spots due to the presence of tremolite. Pyrite is present but only in trace amounts. Jointing appears regular and moderate but the outcrop area appears very limited. The rock is bedded with an average thickness of 1.5 m.

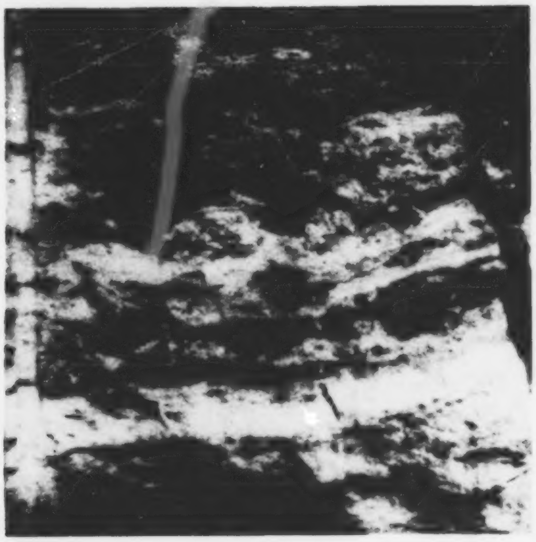


***Photo B65.** View of roadcut face showing foliation due to phlogopite bands. 86-KEN-030*

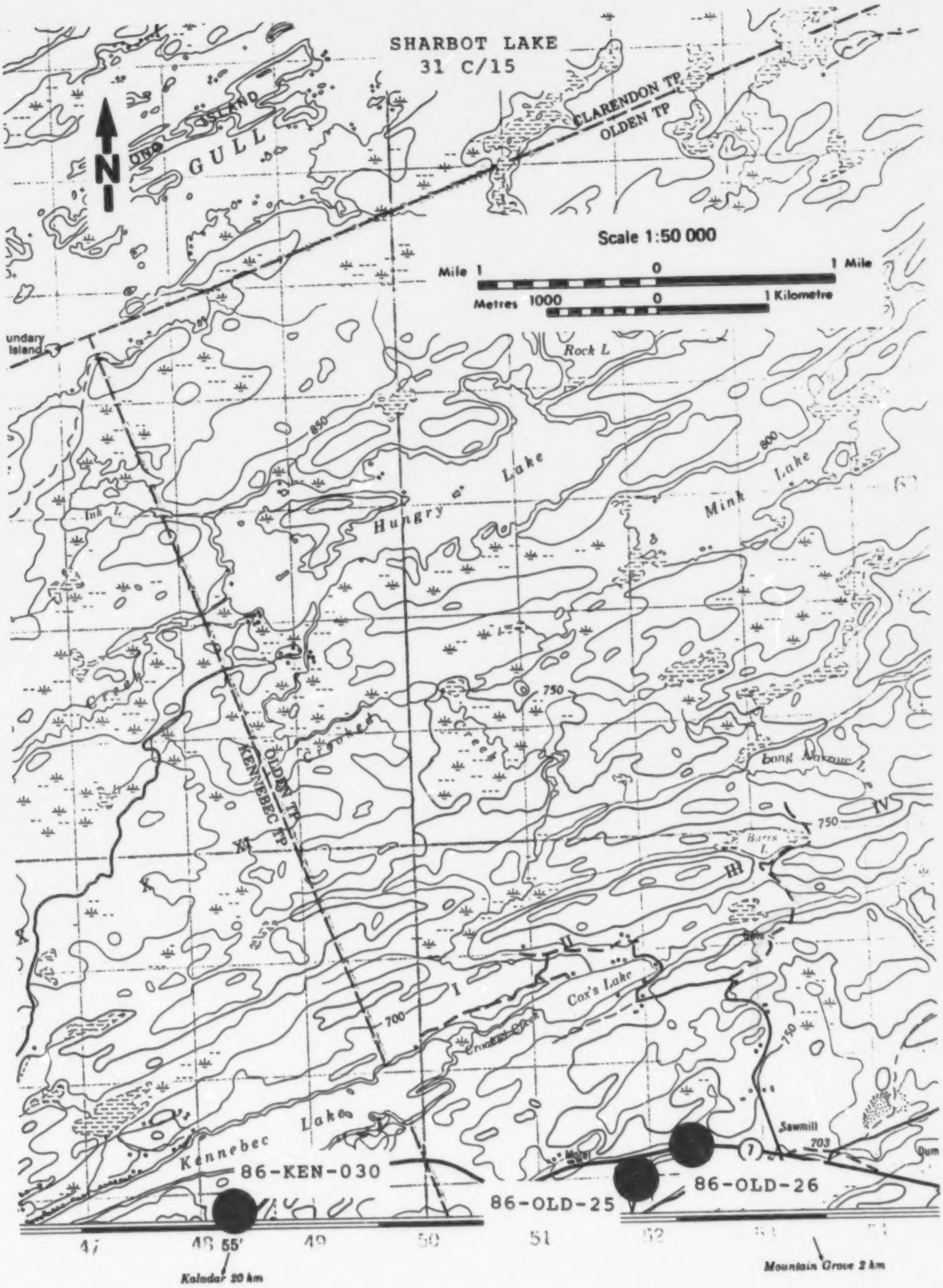

SHARBOT LAKE
31 C/15
N
LONG ISLAND
GULL
CLARENDON TP
OLDEN TP
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
undary Island
Rock L
850
Hungry Lake
800
Mink Lake
Ink L
750
Crooked
Creek
Creek
OLDEN TP
KENNEBEC TP
Long Narrow L
IV
750
Barrs L
XI
X
III
II
I
Cox's Lake
700
Crooked Creek
750
Kennebec Lake
Sawmill
703
7
Motel
86-KEN-030
86-OLD-25
86-OLD-26
47
48 55'
49
50
51
52
53
54
Kaladar 20 km
Mountain Grove 2 km

Figure B61. Sample location, 86-KEN-030.

86-MAD-030

PROPERTY NO. 86-MAD-030 PLUTON NAME

PROPERTY NAME Arena Road COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Marble Breccia

TOWNSHIP Madoc LOT 3 CONC. 6

NTS 31 C/11 UTM CO-ORDINATES Easting 303600 Northing 4931700

PROPERTY STATUS Inactive AIR PHOTO NO. 78-4436-127-160

PRODUCTION HISTORY None-roadcut

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface Pink-brown-grey-white
Weathered Surface Brown-dull
Uniform Variable X

WEATHERING DEPTH up to 0.5 cm

GRAIN SIZE Coarse grains in a fine-grained matrix Uniform Variable X

TEXTURE Brecciated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Brecciation

BEDDING Yes X No Strike 135 degrees Dip Avg. Thickness 2 to 3 m

JOINTING Regular Pattern Irregular Pattern
Limited Jointing Moderate Jointing Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Calcite, quartz

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Limited outcrop exposure.

POSSIBLE USES Architectural stone, ornamental stone

OUTCROP EXPOSURE Good Fair Poor X

COMMENTS This site displays a very unique marble breccia. It appears that very coarse (2 to 3 cm) dolomitic fragments are set in a fine-grained calcitic matrix. The fragments are commonly banded and exhibit a variety of colours, including pink, brown, grey, white, yellow, red and orange, all of which combine to give this stone a striking colour mosaic appearance. The outcrop can be seen on both the north and south sides of Highway 7. On the north side the stone is light, on the south side it appears darker. The breccia zone strikes at about 135 degrees and is 2 to 3 m thick.

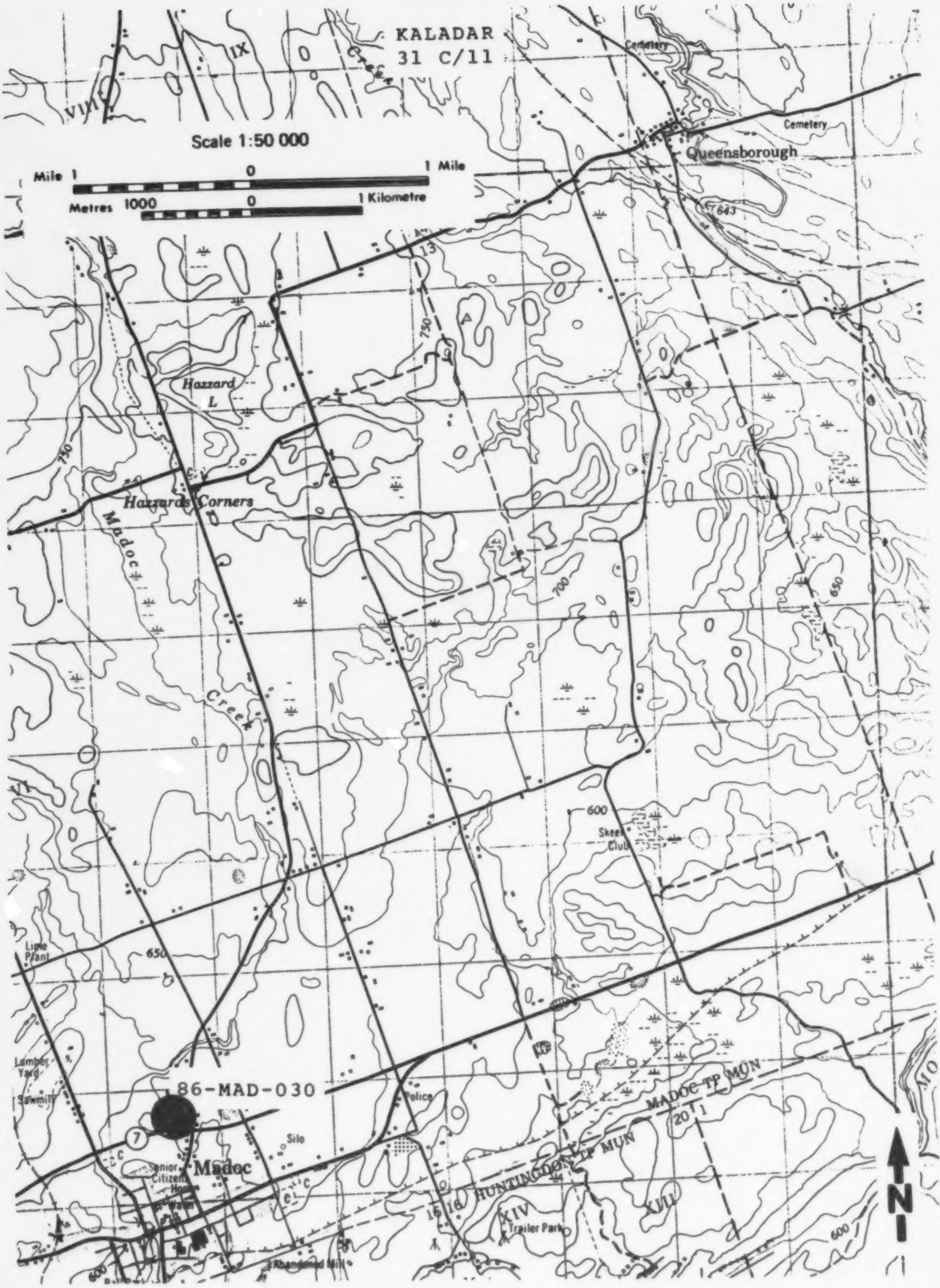

KALADAR
31 C/11
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Queensborough
Cemetery
Cemetery
Hazzard L
Hazzards Corners
Madoc Creek
Skeet Club
Lime Plant
Lumber Yard
Sawmill
86-MAD-030
Madoc
Senior Citizens Home
Police
Silo
MADOC TP MUN
HUNTINGDON TP MUN
Trailer Park
Abandoned Mill
750
700
650
600
N

Figure B62. Sample location, 86-MAD-030.

86-MAR-020

PROPERTY NO. 86-MAR-020 **PLUTON NAME**

PROPERTY NAME Malone-South East (Bonter quarry) **COMMERCIAL STONE NAME** Marble

GEOLOGICAL ROCK NAME Calcitic Marble

TOWNSHIP Marmora **LOT** 17 **CONC.** 11

NTS 31 C/12 **UTM CO-ORDINATES** Easting 293500 Northing 4937100

PROPERTY STATUS Inactive **AIR PHOTO NO.** 78-4439-132-72

PRODUCTION HISTORY Former marble quarry (terrazzo, crushed stone)

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface White-greenish tinge
Weathered Surface Dull white
Uniform Variable X

WEATHERING DEPTH 1 mm

GRAIN SIZE Fine Uniform X Variable

TEXTURE Massive to slightly foliated Uniform Variable X

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Foliation

BEDDING Yes No X Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing Intensive Jointing X
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Calcite (serpentine, diopside)

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Severe blast fractures distort true interpretation of jointing.

POSSIBLE USES Crushed stone, ornamental stone

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS This property appears to have very little potential for building stone except as small items such as bookends or other ornaments. The colour is dominantly white with a greenish tinge in some areas. Jointing is very intensive and irregular, probably due to blasting. Away from the quarry, it may improve but overburden prevents confirmation of this. The rock is predominantly massive but some foliation can be seen in the form of greenish bands and swirls which are likely diopside or serpentine. Minor pyrite was also noted.

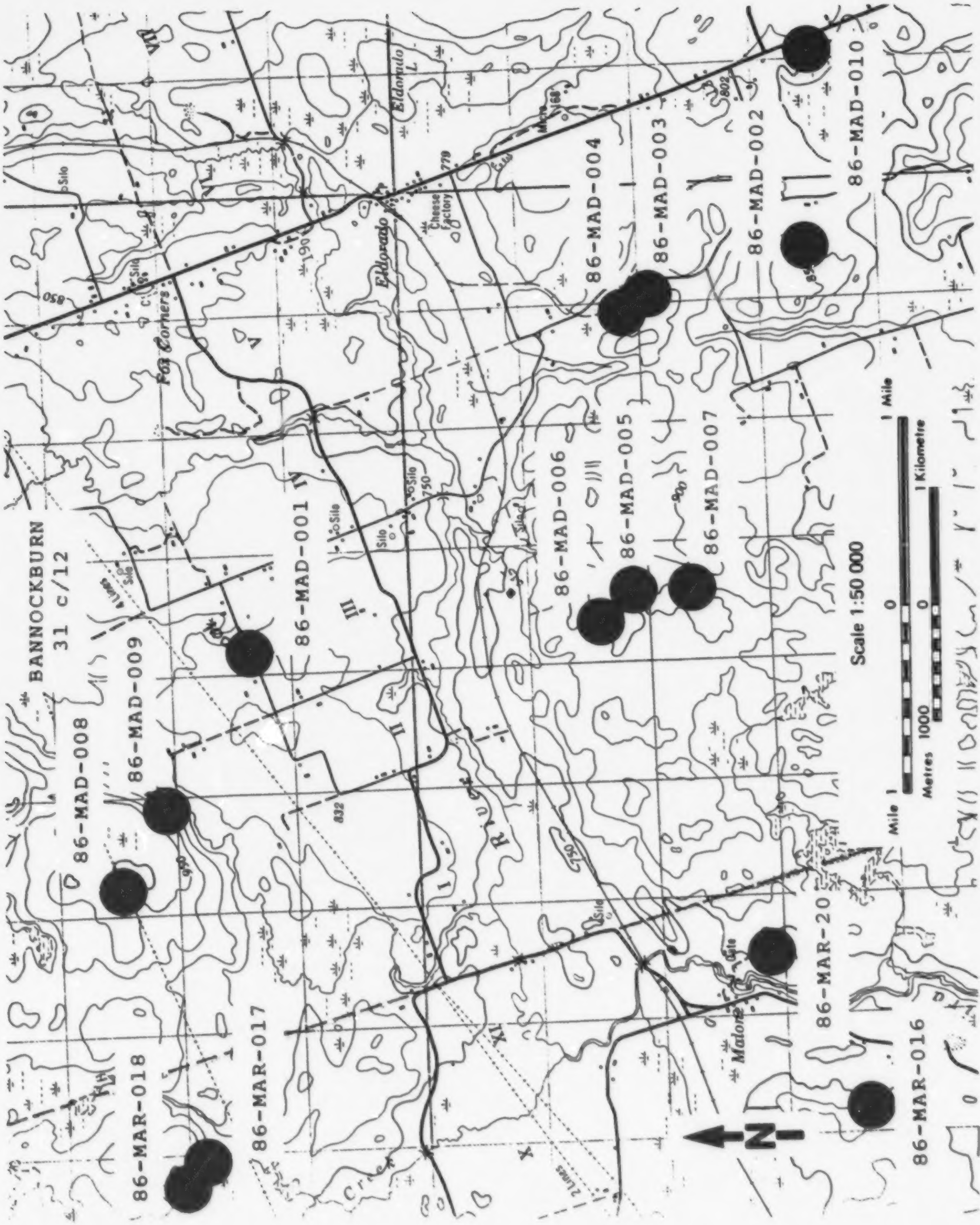

BANNOCKBURN
31 c/12
86-MAD-008
86-MAD-009
86-MAD-001
86-MAD-006
86-MAD-005
86-MAD-007
86-MAD-004
86-MAD-003
86-MAD-002
86-MAD-010
86-MAR-018
86-MAR-017
86-MAR-20
86-MAR-016
Fox Corners
Eldorado
Eldorado L
Cheese Factory
Malone
River
Creek
Silo
N
Scale 1:50 000
Mile
Kilometre
Metres
0
1000
1

Figure B63. Sample location, 86-MAR-020.

86-OLD-026

PROPERTY NO. 86-OLD-026   PLUTON NAME

PROPERTY NAME Howard Gibbs   COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Dolomitic Marble

TOWNSHIP Olden   LOT 17   CONC. 2

NTS 31 C/15   UTM CO-ORDINATES Easting 3523501 Northing 4957200

PROPERTY STATUS Roadcut   AIR PHOTO NO. 78-4453-162-129,130,131

PRODUCTION HISTORY None

USE OF EXPLOSIVES Yes X No   Type High velocity

COLOUR Fresh Surface White
Weathered Surface Grey-black
Uniform X   Variable

WEATHERING DEPTH Nil

GRAIN SIZE Medium   Uniform X   Variable

TEXTURE Foliated   Uniform X   Variable

FABRIC Yes X No.   Weak   Mod.   Strong X   Strike   Dip
Formed By Foliation

BEDDING Yes X No   Strike   Dip   Avg. Thickness 2 to 3 m

JOINTING Regular Pattern   Irregular Pattern X
Limited Jointing   Moderate Jointing   Intensive Jointing X
A) Strike   Dip   Spacing
B) Strike   Dip   Spacing
C) Strike   Dip   Spacing
D) Strike   Dip   Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Dolomite, tremolite

DELETERIOUS MINERALS Yes X No Type Pyrite-phlogopite Percent Trace

OTHER FEATURES

POSSIBLE USES Landscaping stone, ornamental stone, ashlar

OUTCROP EXPOSURE Good   Fair X   Poor

COMMENTS This site is a roadcut on Highway 7 near Mountain Grove. It is a foliated dolomitic marble with medium grain size. The marble appears to be bedded with an average thickness of 2 to 3 m. In addition to dolomite, a major constituent is tremolite. Pyrite and phlogopite are found in trace amounts. Overburden and blast fracturing hinder an accurate evaluation of the jointing but it appears fairly irregular and intense, limiting the building stone potential.

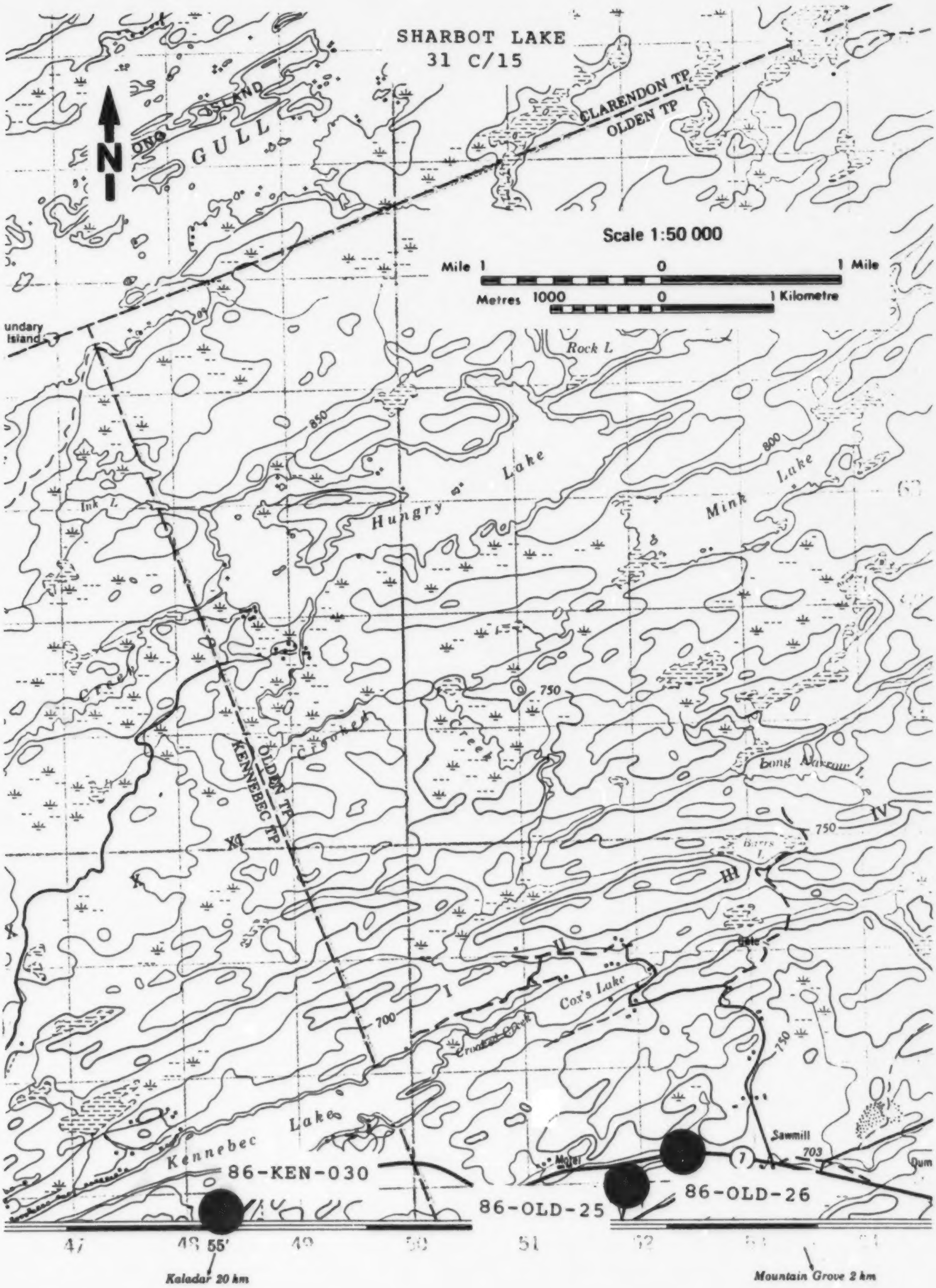

SHARBOT LAKE
31 C/15
N
LONG ISLAND
GULL
CLARENDON TP
OLDEN TP
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
Boundary Island
Rock L.
850
800
Hungry Lake
Mink Lake
Ink L.
750
Crooked Creek
Creek
OLDEN TP
KENNEBEC TP
Long Narrow L.
750
IV
XI
X
X
Barrs L.
III
II
I
Gate
Cox's Lake
700
Crooked Creek
750
Kennebec Lake
Sawmill
7
703
Motel
86-KEN-030
86-OLD-25
86-OLD-26
47
48
55'
49
50
51
52
Kaladar 20 km
Mountain Grove 2 km

Figure B64. Sample location, 86-OLD-026.

86-OSO-010

PROPERTY NO. 86-OSO-010   PLUTON NAME

PROPERTY NAME John Donelly Gravel   COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Grey banded crystalline limestone

TOWNSHIP Oso   LOT 23   CONC. 5

NTS 31 C/15   UTM CO-ORDINATES Easting 371300 Northing 4967800

PROPERTY STATUS Inactive   AIR PHOTO NO. 78-4459-90-128

PRODUCTION HISTORY Former Gravel Pit

USE OF EXPLOSIVES Yes   No X   Type

COLOUR
Fresh Surface White and grey banded
Weathered Surface White and grey banded
Uniform X   Variable

WEATHERING DEPTH Nil

GRAIN SIZE Coarse   Uniform X   Variable

TEXTURE Foliated-Granoblastic   Uniform X   Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Foliation - Relict bedding

BEDDING Yes X No Strike 65 degrees Dip 50 degrees S. Avg. Thickness

JOINTING
Regular Pattern X   Irregular Pattern
Limited Jointing   Moderate Jointing X   Intensive Jointing
A) Strike 65 degrees Dip 50 degrees S Spacing 0.5 m
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Calcite

DELETERIOUS MINERALS Yes X No   Type Pyrite   Percent Trace

OTHER FEATURES Some areas of outcrop may show large dark patches of uncertain mineralogy.

POSSIBLE USES Architectural stone, structural stone, ashlar

OUTCROP EXPOSURE Good   Fair   Poor X

COMMENTS This crystalline limestone is quite attractive because of alternating white and grey bands of calcite. The texture of the rock is foliated with granoblastic coarse grains. A gravel pit has exposed a face of this rock which displays the foliation quite well. The jointing appears to be fairly regular and moderate, striking at about 65 degrees. The mineralogy is calcite with trace amounts of pyrite. Also present were large dark inclusions of uncertain mineralogy. This area may warrant further investigation.

Photo B66. Bedding with large mafic knots; field of view is approximately 2 m. 86-OSO-010

Photo B67. View showing foliated texture of rock. 86-OSO-010

86-OSO-011

PROPERTY NO. 86-OSO-011 PLUTON NAME Zealand Corners

PROPERTY NAME Zealand Corners COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Dolomitic Marble

TOWNSHIP Oso LOT 20 CONC. 6

NTS 31 C/15 UTM CO-ORDINATES Easting 371550 Northing 4965500

PROPERTY STATUS Roadcut AIR PHOTO NO. 78-4458-189-175,176,177

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High velocity

COLOUR Fresh Surface White
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH Nil

GRAIN SIZE Medium Uniform X Variable

TEXTURE Slightly foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. X Strong Strike Dip
Formed By Foliation - Relict Bedding

BEDDING Yes No Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike Dip Spacing
B) Strike Dip Spacing
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Dolomite

DELETERIOUS MINERALS Yes X No Type Phlogopite-garnet Percent Trace

OTHER FEATURES Limited outcrop area.

POSSIBLE USES Landscaping stone, ornamental stone, monument stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This site consists of a white dolomitic marble that displays slight foliation, perhaps due to relict bedding. The jointing pattern appears to be fairly regular and moderate, but not optimal for building stone extraction, except on a fairly small scale. The fresh surface of the rock displays an attractive white, medium-grained, slightly foliated texture. Outcrop area is fair to poor in extent. Phlogopite and garnet are found in the stone in trace amounts.

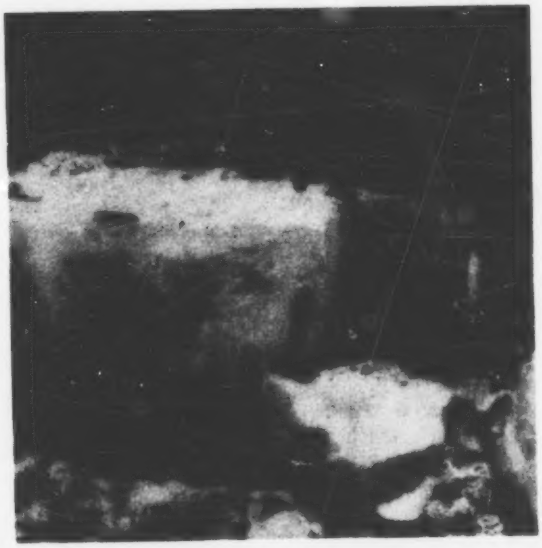


Photo B68. View showing limited outcrop exposure, uniform massive texture and white colour. 86-OSO-011

86-OSO-012

PROPERTY NO. 86-OSO-012 PLUTON NAME

PROPERTY NAME Ralph MacPherson COMMERCIAL STONE NAME Limestone

GEOLOGICAL ROCK NAME Grey banded limestone

TOWNSHIP Oso LOT 21 CONC. 4

NTS 31 C/15 UTM CO-ORDINATES Easting 369100 Northing 4965300

PROPERTY STATUS Inactive AIR PHOTO NO. 78-4458-189-173,174,175

PRODUCTION HISTORY Former marble quarry

USE OF EXPLOSIVES Yes X No Type

COLOUR Fresh Surface Light whitish grey
Weathered Surface Dark grey
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Fine to coarse Uniform Variable X

TEXTURE Foliated Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike Dip
Formed By Foliation

BEDDING Yes X No Strike Dip Avg. Thickness

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing

A) Strike	65 degrees	Dip 70 degrees S.	Spacing 0.5 m
B) Strike	130 degrees	Dip	Spacing
C) Strike		Dip	Spacing
D) Strike		Dip	Spacing

POTENTIAL FOR QUARRY BLOCKS Fair

MINERALOGY Calcite, some tremolite

DELETERIOUS MINERALS Yes X No Type Biotite Percent 5%

OTHER FEATURES Some biotite or hornblende pods.

POSSIBLE USES Architectural stone, ornamental stone, ashlar

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS This rock is quite attractive and displays alternating bands of coarse, white calcite and fine- to medium-grained, greyish calcite. The bands vary in width but appear to be less than 2 cm on average. Establishing a definite joint pattern is difficult but blocks of 1 by 1 by 1 m have been removed and some are still at the site. Minor siliceous veining, biotite and hornblende pods (15 by 30 cm), and accessory tremolite are present in the marble. This quarry would only be suited for very small scale uses.

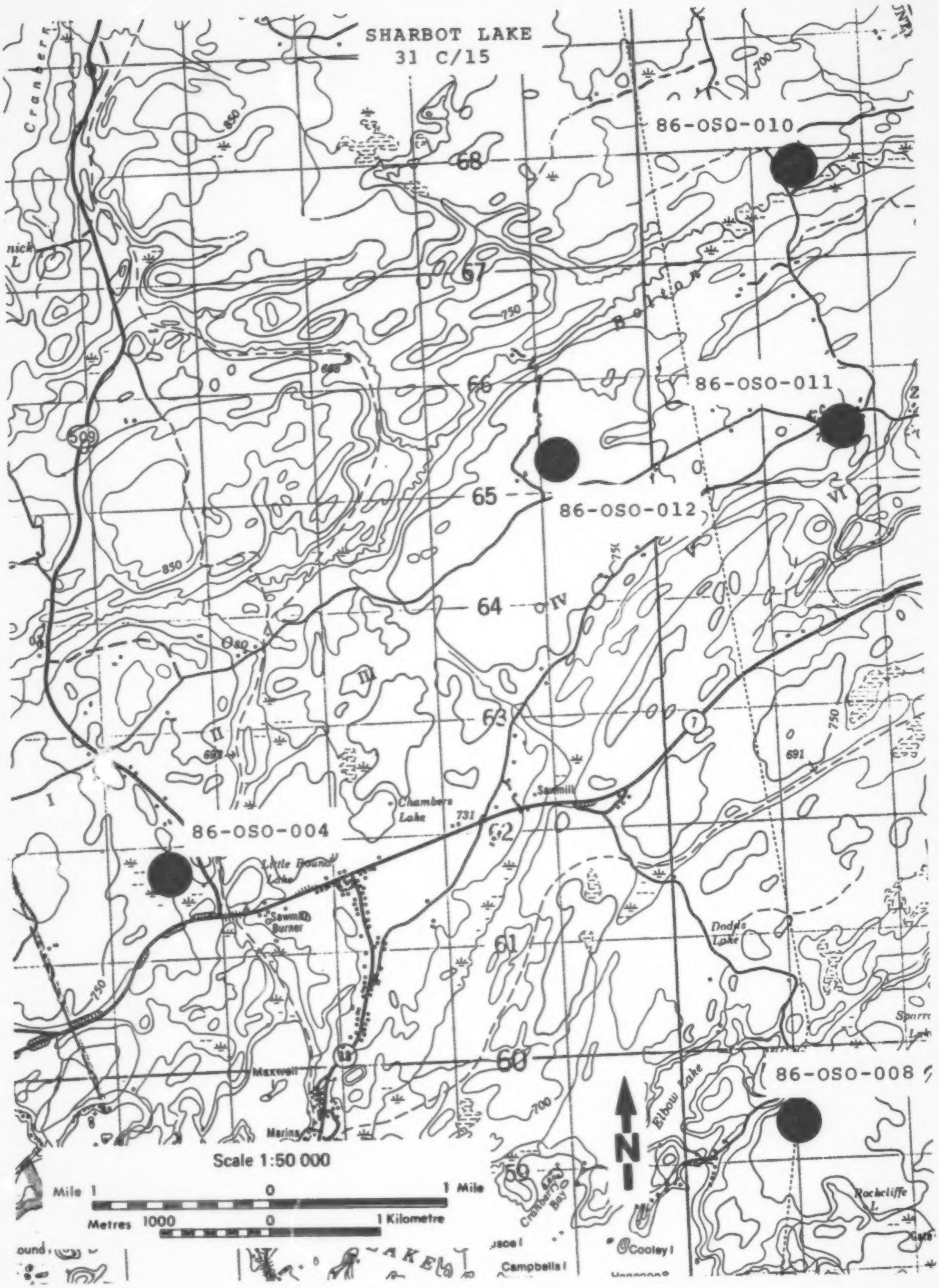

SHARBOT LAKE
31 C/15
86-OSO-010
86-OSO-011
86-OSO-012
86-OSO-004
86-OSO-008
68
67
66
65
64
63
62
61
60
59
Bolton
Oso
Chambers Lake
Little Round Lake
Sawmill
Sawmill Burner
Dodds Lake
Elbow Lake
Maxwell
Marina
Rockcliffe L.
Cranberry Bay
Cooley I
Campbells I
850
750
700
691
731
509
7
38
N
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre

Figure B65. Sample locations, 86-OSO-010, 86-OSO-011, 86-OSO-012.

86-ROSS-001

PROPERTY NO. 86-ROSS-001 PLUTON NAME

PROPERTY NAME COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Calcitic Marble

TOWNSHIP Ross LOT 24 CONC. 2

NTS 31 F/10 UTM CO-ORDINATES Easting 361250 Northing 504650

PROPERTY STATUS Prospect AIR PHOTO NO.

PRODUCTION HISTORY Nil

USE OF EXPLOSIVES Yes X No Type High velocity - roadcut

COLOUR Fresh Surface Banded pale and dark grey to blue-grey
Weathered Surface Black
Uniform X Variable

WEATHERING DEPTH <1 cm

GRAIN SIZE Coarse Uniform X Variable

TEXTURE Banded Uniform X Variable

FABRIC Yes X No. Weak Mod. Strong X Strike 10 degrees Dip 80 degrees E (variable)
Formed By Colour banding

BEDDING Yes No Strike Dip Avg. Thickness

JOINTING Regular Pattern Irregular Pattern X
Limited Jointing Moderate Jointing X Intensive Jointing

A)	Strike	340 degrees	Dip	90 degrees	Spacing	0.3 to 1 m
B)	Strike	100 degrees	Dip	80 degrees S.	Spacing	0.3 to 3 m
C)	Strike		Dip	horizontal	Spacing	0.3 to 1.5 m
D)	Strike		Dip		Spacing	

POTENTIAL FOR QUARRY BLOCKS Poor to moderate

MINERALOGY Calcite; dark grey bands contain 1% graphite

DELETERIOUS MINERALS Yes X No Type Pyrite Percent Trace

OTHER FEATURES Orange iron stain in pale grey bands, probably caused by oxidation of fine pyrite.

POSSIBLE USES Ashlar, ornamental stone, landscaping stone

OUTCROP EXPOSURE Good Fair X Poor

COMMENTS Some large quarry blocks could be extracted, but the irregular joint pattern limits the potential as a quarry site.

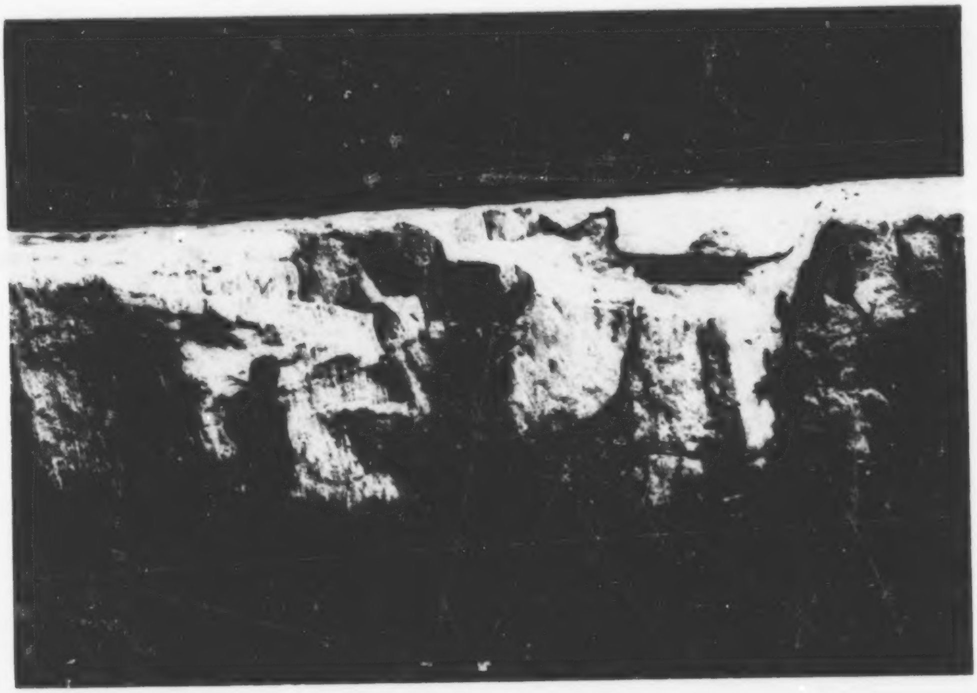


Photo B69. Moderate jointing in banded marble. 86-ROSS-001

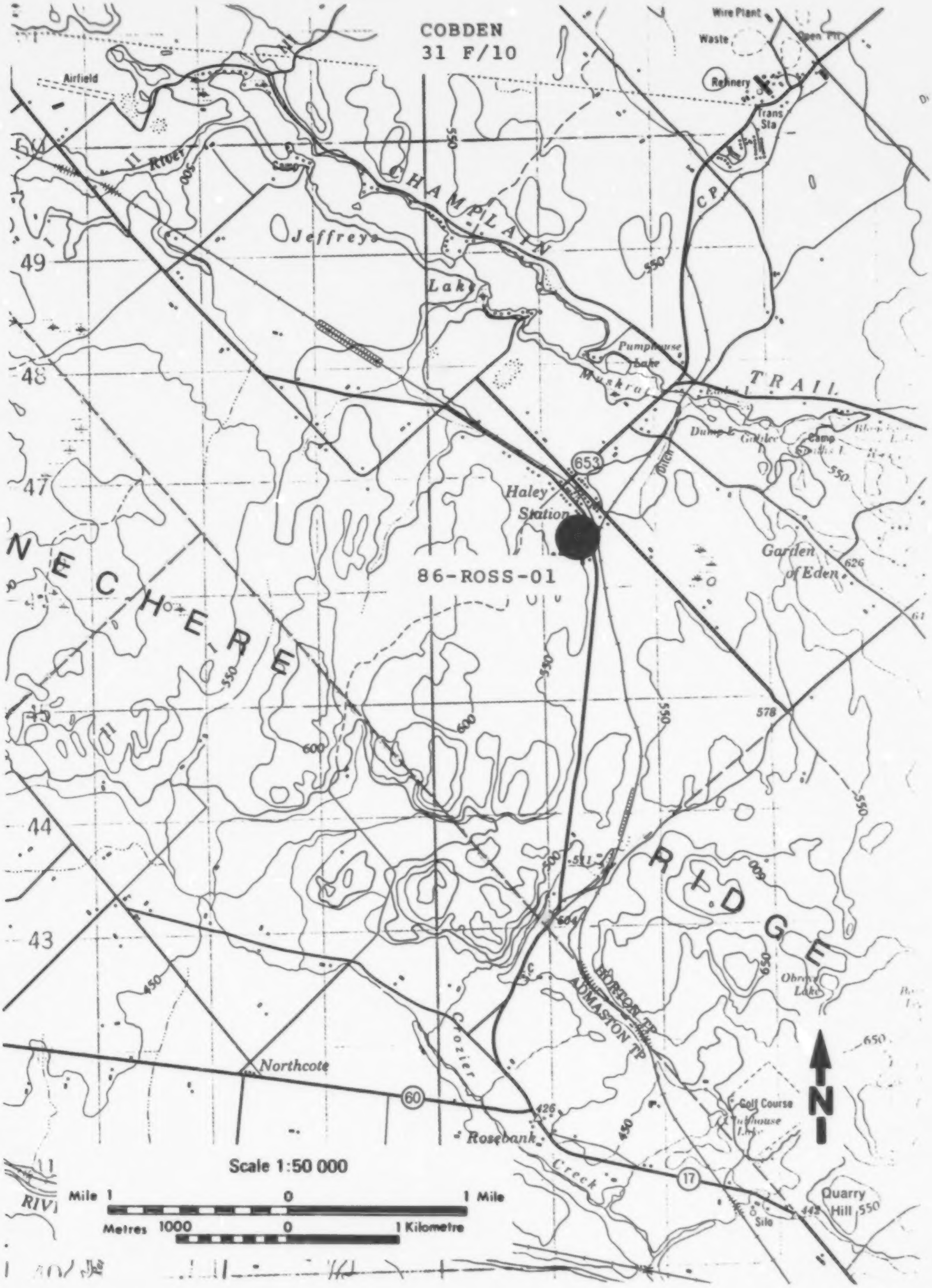

COBDEN
31 F/10
86-ROSS-01
Haley Station
Jeffreys Lake
Pumphouse Lake
Muskrat
CHAMPLAIN TRAIL
NECHERE RIDGE
Garden of Eden
Northcote
Rosebank
Creek
Quarry Hill
Golf Course
Obrien Lake
HORTON TP
ADMASTON TP
Wire Plant
Waste
Open Pit
Refinery
Trans Sta
Airfield
River
Scale 1:50 000
Mile 1
0
1 Mile
Metres 1000
0
1 Kilometre
N
653
60
17
49
48
47
44
43
550
600
650
450
578
626
604
426
442
Silo

Figure B66. Sample location, 86-ROSS-001.

Appendix B. 1986 Property Examination Reports—Limestone Properties

86-THUR-001

PROPERTY NO. 86-THUR-001 PLUTON NAME

PROPERTY NAME Point Anne Quarry COMMERCIAL STONE NAME Marble

GEOLOGICAL ROCK NAME Limestone

TOWNSHIP Thurlow LOT 23, 24 CONC. B.F.

NTS 31 C/3 UTM CO-ORDINATES Easting 317650 Northing 4992800

PROPERTY STATUS Active AIR PHOTO NO.

PRODUCTION HISTORY McFarlane Construction Company, Canada Cement LaFarge

USE OF EXPLOSIVES Yes X No Type High velocity

COLOUR Fresh Surface Grey
Weathered Surface Grey
Uniform X Variable

WEATHERING DEPTH Negligible

GRAIN SIZE Lithographic to coarsely crystalline Uniform Variable X

TEXTURE Massive Uniform X Variable

FABRIC Yes No. X Weak Mod. Strong Strike Dip
Formed By

BEDDING Yes X No Strike Sub Horizontal Dip Avg. Thickness 1 m

JOINTING Regular Pattern X Irregular Pattern
Limited Jointing Moderate Jointing X Intensive Jointing
A) Strike 100 degrees Dip Vertical Spacing 1 m
B) Strike Horizontal Dip Spacing 1 m
C) Strike Dip Spacing
D) Strike Dip Spacing

POTENTIAL FOR QUARRY BLOCKS Poor

MINERALOGY Calcite

DELETERIOUS MINERALS Yes No X Type Percent

OTHER FEATURES Thin interbeds of shale.

POSSIBLE USES Crushed aggregate

OUTCROP EXPOSURE Good X Fair Poor

COMMENTS The Point Anne quarry displays limestone bedded to a maximum thickness of 1 m. The grain size varies from lithographic to coarsely crystalline with a massive texture. At present it appears that McFarlane Construction Company is quarrying Bobcageon Formation limestone for crushed aggregate. The main part of the quarry is under approximately 50 feet of water and is inactive. The northeast section of the property is presently being worked by McFarlane and is the only active part of the quarry. The jointing is fairly regular and moderate and blocks of 1 m cubed could be removed. Also present are minor interbeds of shale.

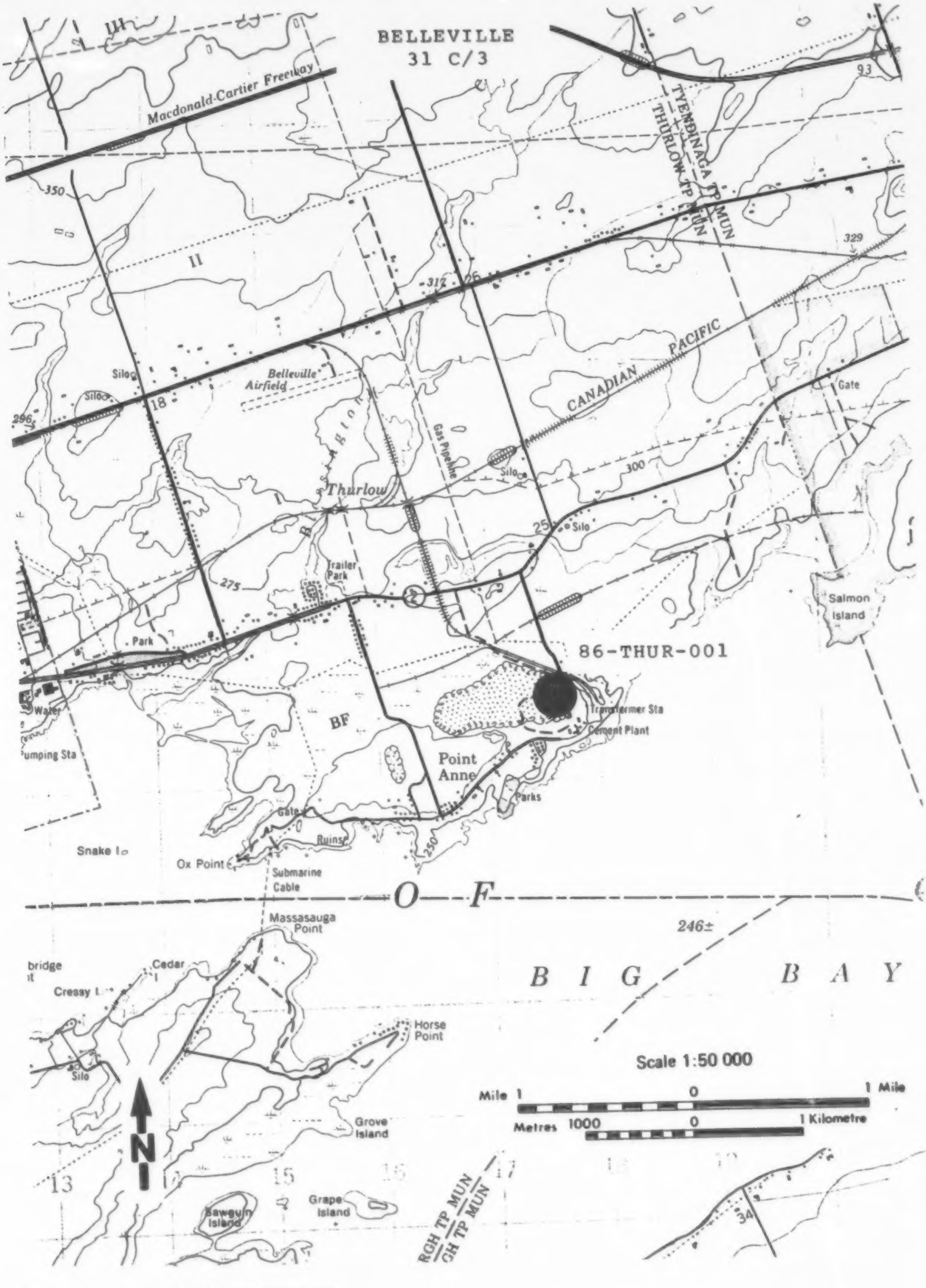

BELLEVILLE
31 C/3
Macdonald-Cartier Freeway
TYENDINAGA TP MUN
THURLOW TP MUN
CANADIAN PACIFIC
Belleville Airfield
Gas Pipeline
Thurlow
Trailer Park
Park
Water
Pumping Sta
BF
Point Anne
86-THUR-001
Transformer Sta
Cement Plant
Parks
Salmon Island
Gate
Silo
Snake I.
Ox Point
Ruins
Submarine Cable
Massasauga Point
Cedar I
Cressy
Horse Point
Grove Island
Grape Island
Sawguin Island
O F
B I G B A Y
246±
Scale 1:50 000
Mile 1 0 1 Mile
Metres 1000 0 1 Kilometre
N

Figure B67. Sample location, 86-THUR-001.

Appendix C. List of Granite Properties Examined 1985–86, Grouped by Pluton

1986 PROPERTY EXAMINATIONS—GRANITE

Pluton Name	Property Report	Potential Poor (P) Moderate (M) Good (G)
Abbotts Hill	86-OLD-007	P
	86-OLD-008	P
	86-OLD-009	P
	86-KEN-007	P
	86-KEN-008	P
	86-KEN-009	P
	86-KEN-010	P
Addington	86-OLD-003	P
	86-OLD-004	P
Beaver Creek	86-TUD-003	P
	86-TUD-004	P
	86-TUD-005	P
	86-TUD-006	P
	86-TUD-007	P
	86-TUD-008	P
Bishop Corners Formation	86-KAL-009	M
Coe Hill	86-WOL-006	P
	86-WOL-007	M
	86-WOL-008	M
	86-WOL-009	P
	86-WOL-010	M
Cordova	86-MAR-001	P
	86-MAR-002	P
	86-MAR-003	P
	86-MAR-004	P
	86-MAR-014	P
	86-MAR-015	P
Crow Lake	86-SCRO-001	P
Deloro	86-MAR-005	P
	86-MAR-006	P
	86-MAR-007	M-G
	86-MAR-008	G
	86-MAR-009	M
	86-MAR-010	M-G
	86-MAR-011	M
	86-MAR-012	P
	86-MAR-013	M
	86-MAD-002	P
	86-MAD-003	P
	86-MAD-004	P
	86-MAD-005	P
	86-MAD-006	P
	86-MAD-007	P
	86-MAD-010	M
Elzevir	86-KAL-001	P-M
	86-KAL-002	P-M
	86-KAL-004	P
	86-KAL-005	P-M
	86-ELZ-001	P
	86-ELZ-002	P
	86-ELZ-003	P-M
	86-ELZ-004	M
	86-ELZ-005	P
	86-ELZ-006	P-M
	86-ELZ-007	P-M
	86-ELZ-008	P-M
	86-ELZ-009	P-M
Empey	86-MAD-001	P
Gawley Creek	86-MAR-017	P
	86-MAR-018	P
	86-MAD-008	P
	86-MAD-009	P

1986 PROPERTY EXAMINATIONS—GRANITE

Pluton Name	Property Report	Potential Poor (P) Moderate (M) Good (G)
Glanmire	86-TUD-009	P
	86-TUD-010	P
	86-TUD-011	P
	86-TUD-012	P
Lanark-Oso	86-OSO-001	P
	86-OSO-002	P
	86-OSO-003	P
	86-OSO-008	P
	86-SSHER-001	P
Lavant	86-OSO-005	P
	86-OSO-006	P
	86-OSO-007	P
	86-LAV-001	P
Leggat Lake	86-OLD-005	P-M
	86-OLD-006	P
	86-OLD-010	P
	86-OLD-011	P
	86-OLD-012	P
	86-OLD-013	P
	86-OLD-014	P
Malone	86-MAR-016	P
McLean	86-OLD-015	P
	86-OLD-016	P
	86-OLD-017	P
	86-OLD-018	P
	86-OLD-019	P
	86-OLD-020	M
	86-OLD-021	P
	86-OLD-022	M
	86-HIN-002	P
	86-KEN-011	P
	86-KEN-012	P
Methuen and Belmont	86-BEL-001	P
	86-MET-001	P
Mount Moriah	86-ELZ-010	P
	86-ELZ-011	P-M
	86-ELZ-012	P
	86-GRI-001	P-M
	86-GRI-002	P-M
	86-GRI-003	P-M
	86-GRI-004	P-M
	86-GRI-005	G
Mountain Grove	86-OLD-027	P
Newboro	86-NCROS-005	P
Northbrook	86-KAL-006	P
	86-KEN-001	M
	86-KEN-002	P-M
	86-KEN-003	P-M
	86-KEN-004	P-M
	86-KEN-005	P
	86-KEN-006	P
Rideau Lake	86-NBURG-001	P
	86-NBURG-002	P
	86-NBURG-003	P
	86-NBURG-004	P
	86-NBURG-005	P
Skootamatta Lake	86-ANG-001	P
	86-ANG-002	P
	86-ANG-003	P
	86-GRI-006	P
	86-GRI-007	P
Tamworth, Bellrock	86-CAM-001	P
Wilkinson, First Depot	86-POR-001	P
	86-POR-002	P
	86-POR-003	P
	86-POR-004	P
	86-HIN-001	P-M

1986 PROPERTY EXAMINATIONS—GRANITE

Pluton Name	Property Report	Potential Poor (P) Moderate (M) Good (G)
The Ridge	86-WOL-012	P
Umfraville	86-WOL-004	P
	86-WOL-005	P
Wadsworth	86-TUD-001	P
	86-TUD-002	P
Weslemkoon	86-DEN-001	P
Westport	86-NCROS-001	P
	86-NCROS-002	P
White Lake	86-OSO-004	P
	86-OLD-001	P
	86-OLD-002	P
Wolfe Lake	86-NCROS-003	P
	86-NCROS-004	P
Wollaston Granite	86-WOL-002	P
	86-WOL-003	P
	86-WOL-011	P
Wollaston Lake Gabbro	86-WOL-013	P
Township		
Chandos	86-CHA-001	P
Hungerford	86-HUN-001	P
Limerick	86-LIM-001	P
Madoc	86-MAD-031	P-M
Olden	86-OLD-025	G
Wollaston	86-WOL-001	M

1985 PROPERTY EXAMINATIONS

Pluton Name	Property Report	Potential Poor (P) Moderate (M) Good (G)
Battersea	85-STO-01	G (active quarry)
	85-STO-02	M-G
Coe Hill	85-WOL-01	M
	85-WOL-02	P-M
Gananoque Syenite	85-FLL-04	M
Glamorgan Gabbro	85-CAV-02	P
	85-GLA-01	P-M
	85-GLA-02	P
Gooderham Syenite	85-MON-01	G
LaRose Bay Diorite	85-RLL-04	M-G
Lyndhurst	85-RLL-01	M (active quarry)
	85-RLL-02	P
	85-RLL-06	G
	85-RLL-07	G
	85-RLL-08	G
Mallard Lake	85-DUN-06b	M
Sheffield	85-HUG-01	P
Taylor	85-FLL-01	G (active quarry)
	85-FLL-02	G (active quarry)
	85-FLL-03	P
	85-FLL-05	P
Pittsburgh	85-PIT-01	P-M
Township		
Burleigh	85-BUR-01	G
Carlow	85-CARL-01	M-G
Cavendish	85-CAV-01	P
Elizabethtown	85-ELI-01	P
Elizabethtown	85-ELI-02	P
Front of Escott	85-FOE-01	P
Front of Escott	85-FOE-02	P
Front of Yonge	85-KAL-01	M-G
Kaladar	85-KAL-01	M-G
Pittsburgh	85-PIT-02	P
Raglan	85-RAG-01	G
Rear of Leeds and Lansdowne	85-RLL-05	P
Rear of Yonge	85-ROY-01	P
Wollaston	85-WOL-03	P

Appendix D. ASTM Tests on Granite and Marble Samples from the Ontario Ministry of Northern Development and Mines (Job No. 025506)

R.L. Chevrier

Construction Materials Section, MSL

August 1987

CANMET Mineral Sciences Laboratories Internal Report (Energy, Mines and Resources Canada)

INTRODUCTION

This report presents results of ASTM testing on prepared building stone samples supplied by the Ontario Department of Northern Development and Mines, Tweed, Eastern Region. The work was requested by Ron Collings, Head, Non-Metallic Minerals Section and was carried out in the Construction Materials Laboratory of MSL.

Apart from freeze-thaw durability, all other requested ASTM tests were performed in accordance with standards for natural building stones. Freeze-thaw durability tests were carried out using ASTM C666 (Procedure A) normally specified for testing concrete specimens.

SAMPLE PREPARATION

The load bearing faces of each specimen tested in compression (ASTM C170) were ground and polished to obtain parallel and planar surfaces. Specimens were later checked for planarity using a machined-steel surface in accordance with note 4 of ASTM C170.

For ASTM C97, C241, C99, C880 and C666, specimens were tested as received.

PRECONDITIONING

Specimens for compression (ASTM C170), flexural (ASTM C880) and modulus of rupture (ASTM C99) were tested wet after being immersed for 48 hours in water at a temperature of approximately 20°C.

Specimens for freeze-thaw durability were tested after being immersed 48 hours in water at 20°C and 1 hour at 5°C.

TEST RESULTS

A total of 6 granite (no. 1, 10, 12, 13, 52, 82) and 3 marble (no. 29, 31, 71) samples were received and each was tested as indicated in Table D1.

A summary of test results is presented in Tables D2 and D3. Detailed test results are given in Tables D4, D5 and D6 and ASTM test specifications are reproduced in American Society for Testing and Materials (1985).

TABLE D1. TEST RESULTS.

Test	ASTM	No. of Specimens	Specimen size inches
Absorption	C97	3	2 x 2 x 3
Bulk Specific Gravity	C97	3	2 x 2 x 1
Abrasion Resistance	C241	3	2 x 2 x 1
Modulus of Rupture	C99	3	4 x 8 x 2.25
Compressive Strength	C170	3	2 x 2 x 3
Flexural Strength	C880	3	1 x 1.5 x 12
Freeze-Thaw Durability	C666*	2	4 x 8 x 2.25

**Procedure "A"*

TABLE D2. SUMMARY OF TEST RESULTS.

Type of Stone	Sample No.	ASTM C97		ASTM C241	ASTM C99	ASTM C170		ASTM C880
		Absorption (by weight) %	Bulk Specific Gravity	Abrasion Resistance, Ha	Modulus of Rupture, MPa	Compressive Strength, MPa		Flexural Strength, MPa
						51x51x76 mm specimens	corresponding cube strength*	
Granite	1	0.11	2.68	62.9	11.8	176.8	190.0	13.1
	10	0.17	2.66	68.6	11.6	211.0	226.9	15.0
	12	0.04	2.76	67.7	15.2	169.6	183.2	15.8
	13	0.07	2.72	71.0	13.2	191.2	205.0	13.3
	52	0.10	2.72	64.0	11.5	141.9	153.0	-**
	82	0.15	2.61	51.2	11.6	144.2	154.8	10.0
Marble	29	0.03	2.78	23.1	10.2	153.0	164.8	5.3
	31	0.04	2.87	9.6	9.3	169.0	181.7	5.7
	71	0.08	2.73	10.7	6.3	79.4	85.0	5.9

**Calculated as per section 9.2 of ASTM C170*
***Specimens not available*
Note: Each value is average of three test specimens.

TABLE D3. SUMMARY OF FREEZING AND THAWING TEST RESULTS.

Type of Stone	Sample No.	ASTM C666 (Procedure A)			
		Weight change, %	Pulse velocity change, %	Frequency change, %	Modulus of rupture after 300 cycles, MPa
Granite	1	0.0	4.8	5.1	11.1
	10	0.0	1.4	3.1	17.2
	12	0.0	1.0	-1.0	17.3
	13	0.0	2.4	-9.6	17.7
	52	0.0	0.8	5.6	14.0
	82	0.0	1.1	1.1	11.8
Marble	29	0.0	1.7	1.1	11.3
	31	0.0	1.3	1.8	8.6
	71	0.0	8.7	7.1	6.0

Note: Each value is average of two test specimens.

TABLE D4. ABSORPTION, BULK SPECIFIC GRAVITY AND ABRASION RESISTANCE.

Type of Stone	Sample No.	Absorption, %			Specific Gravity			Abrasion, Ha		
		max.	min.	aver.	max.	min.	aver.	max.	min.	aver.
Granite	1	0.112	0.103	0.11	2.690	2.676	2.68	69.94	55.07	62.9
	10	0.201	0.143	0.17	2.667	2.660	2.66	76.69	61.66	68.6
	12	0.050	0.037	0.04	2.759	2.755	2.76	75.05	61.33	67.7
	13	0.073	0.067	0.07	2.732	2.695	2.72	72.99	68.00	71.0
	52	0.116	0.081	0.10	2.716	2.714	2.72	66.33	59.84	64.0
	82	0.162	0.138	0.15	2.610	2.608	2.61	52.81	48.09	51.2
Marble	29	0.054	0.019	0.03	2.808	2.749	2.78	25.03	20.70	23.1
	31	0.045	0.041	0.04	2.867	2.865	2.87	10.57	8.64	9.6
	71	0.087	0.075	0.08	2.732	2.731	2.73	11.08	10.38	10.7

TABLE D5. COMPRESSIVE STRENGTH, FLEXURAL STRENGTH AND MODULUS OF RUPTURE TEST RESULTS ON INDIVIDUAL SPECIMENS.

Type of Stone	Sample No.	Compressive strength, MPa			Flexural Strength, MPa			Modulus of Rupture, MPa		
		1	2	3	1	2	3	1	2	3
Granite	1	167.3	180.8	182.3	13.8	12.7	12.8	11.4	11.8	12.2
	10	207.0	223.0	202.1	13.7	15.8	15.5	11.4	11.3	12.1
	12	177.5	174.1	157.3	15.7	15.0	16.8	16.4	12.1	17.1
	13	171.9	201.1	200.8	12.9	14.3	12.7	16.2	10.4	12.9
	52	144.8	141.0	139.9	–	–	–*	11.9	10.1	12.3
	82	134.9	159.3	138.4	9.7	10.0	10.3	11.3	11.6	12.0
Marble	29	158.6	160.4	140.0	5.6	5.0	–**	9.9	9.6	11.1
	31	169.0	167.2	170.7	6.3	4.5	6.3	9.2	9.4	–***
	71	79.7	80.5	78.0	5.7	6.2	5.7	5.0	6.7	7.2

* *Specimens not available*
** *Specimen broken in transport*
*** *Faulty specimen*

TABLE D6. FREEZING AND THAWING TEST RESULTS ON INDIVIDUAL SPECIMENS.

Type of Stone	Sample and Spec. No.		Weight, g		Velocity, m/s		Frequency, Hz		Modulus of rupture after 300 cycles, MPa
			Initial	Final	Initial	Final	Initial	Final	
Granite	1	1	3340	3340	5190	5423	9100	9900	11.2
		2	3204	3205	5216	5481	9400	9500	10.9
	10	1	3376	3377	5486	5577	10400	11800	18.1
		2	3213	3214	5541	5601	9100	10700	16.3
	12	1	3309	3308	5949	6000	12700	12300	16.7
		2	3470	3470	5824	5891	12500	12600	17.8
	13	1	3367	3369	5994	6175	13000	12000	18.3
		2	3250	3250	5965	6070	11900	10500	17.1
	52	1	3283	3282	5476	5535	9000	10200	12.1
		2	3044	3044	5526	5556	8900	8700	15.9
	82	1	3205	3205	5413	5470	9300	10000	12.2
		2	3213	3213	5714	5475	8800	8200	11.4
Marble	29	1	3312	3312	6078	6152	12900	13200	10.7
		2	3488	3487	6119	6250	13200	13200	11.8
	31	1	3445	3444	6551	6592	9200	9900	8.1
		2	3365	3365	6404	6527	9800	9400	9.0
	71	1	3228	3228	5674	6030	9000	9300	6.8
		2	3248	3250	5000	5577	9400	10400	5.2

Appendix E. List of Properties with Polished Samples on Display at the MNDM Core Library, Tweed, Ontario

List of Polished Samples, Eastern Ontario Building Stone Survey

Property No.	Sample No.	Township	Rock Type
86-BEL-001	14	Belmont	granite
85-BUR-001	74	Burleigh	porphyritic granite
86-CHA-001	64	Chandos	granite
86-CLA-001	83	Clarendon	marble
85-DAR-001	18	Darling	serpentinized marble
86-DEN-001	62	Denbigh	granite
85-DUN-001	21	Dungannon	dolomitic marble
86-DUN-001	29	Dungannon	stromatolitic marble
86-ELZ-004	52	Elzevir	granite
86-FAR-020	22	Faraday	marble breccia
86-FAR-021	27	Faraday	calcitic marble
86-FLL-005	13	Front of Leeds & Lansdowne	syenite
86-GRI-005	81	Grimsthorpe	syenite
86-HIN-001	54	Hinchinbrooke	anorthosite
85-HUG-002	20, 31	Hungerford	dolomitic marble
85-HUN-001	17	Huntingdon	limestone
85-HUN-004	61	Huntingdon	serpentinized marble
85-KAL-001	15	Kaladar	anthophyllite-bearing ultramafic
86-KAL-009	57	Kaladar	quartz pebble conglomerate
86-KEN-030	58	Kennebec	dolomitic marble
86-MAD-010	60	Madoc	granite
86-MAD-030	3	Madoc	marble breccia
85-MAR-002	8	Marmora	calcitic marble
85-MAR-003	73	Marmora	wollastonite-bearing marble
86-MAR-009	51	Marmora	granite
86-MET-001	68	Methuen	granite
85-MON-001	82	Monmouth	granite
85-MUS-004	24	Muskoka Lake	gabbro
86-OLD-011	55	Olden	granite
86-OLD-020	50	Olden	granite
86-OLD-025	63	Olden	pegmatite
86-OLD-026	65	Olden	dolomitic marble
86-OLD-027	67	Olden	gabbro
86-OSO-010	69	Oso	banded calcitic marble
86-OSO-011	70	Oso	dolomitic marble
86-OSO-012	71	Oso	banded calcitic marble
85-PAK-001	19	Pakenham	limestone
85-RLL-001	2,9,10,16	Rear of Leeds & Lansdowne	granite (Rideau Red)
85-RLL-004	12	Rear of Leeds & Lansdowne	quartz diorite
85-RLL-008	11	Rear of Leeds & Lansdowne	granite
86-ROSS-001	59	Ross	calcitic marble
85-SHIM-001	26	South Himsworth	porphyritic syenite
85-STO-001	7	Storrington	granite (Battersea)
85-STO-002	1	Storrington	granite (Battersea)
85-STR-001	25	Strong	porphyritic gneiss
86-THUR-001	30	Thurlow	stylolitic limestone
85-WOL-001	5	Wollaston	quartz syenite
85-WOL-002	6	Wollaston	diabase
85-WOL-003	4	Wollaston	gabbro
86-WOL-002	56	Wollaston	granite
86-WOL-010	53	Wollaston	granite

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